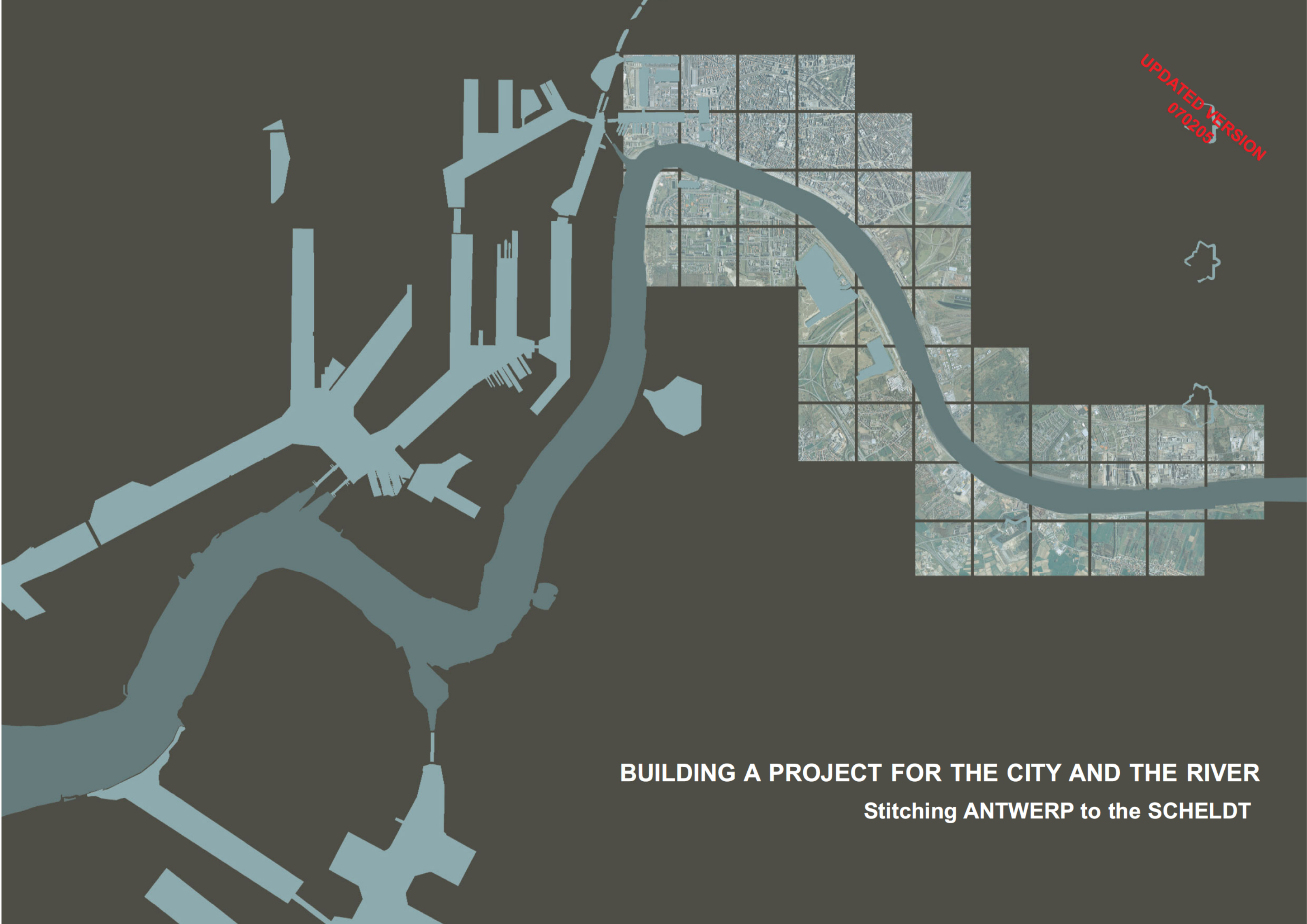


UPDATED VERSION
070205



BUILDING A PROJECT FOR THE CITY AND THE RIVER
Stitching ANTWERP to the SCHELDT

Building a Project for the City and the River

Process of the Masterplan for the Regeneration of the Scheldt Quays.

Methodological position – What is a master plan today?

A. Specific Researches. General issues for Antwerp riverfronts

A1 – Riverbanks and the form of the city

A2 – Section of the River - (Containment system)

A3 – Infrastructures - (River – City – hinterland and development)

A4 – Main Functions and dynamism

B. Visions for the Masterplan. Quays as catalyser for a new urban development

B1 – River as civic space for Antwerp

B2 – Suggesting few visions to be explored during the Masterplan process

-Landscape

-Urban structures

-Urban transformations and/or infills

C. Methodology and working structure

C1 – Method

Research Questions – Answer by hypothesis – Scenarios to be discussed and to be tested – Masterplan

C2 – Organization of the work

D. Fee proposal

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Methodological position What is a master plan today?

Master planning today

The master plan today can be a specific instrument for studying and proposing options on the global scale of a city or a large sector thereof, as well as defining and channelling strategies for large sectors of the territory, such as infrastructures, urban landscape and/or facilities and services.

But above all, it has to seek a "project" orientation with different contents to those of the traditional master plan. Now the city is seen as an open phenomenon, and plans to "close" the city with ring roads are a thing of the past. Zoning by uses also seems to be inappropriate... So, what are the "principles" of planning? What is the best method?

While the idea of planning is firmly rooted in other forms and specialities of knowledge, city planning also has a long tradition which, in some periods, has been more influenced by general thinking with regard to social and/or economic planning, and in others has been seen as being more autonomous.

I refer by city planning to those projects and/or design activities that pursue a judicious spatial and physical definition of the city and urban territories in the mid-term.

My aim is to look at the controversial position of city planning today, and the commonly accepted need for methodological reorientation due to criticism of the ineffectiveness or low quality of results of its application. Signs of reorientation can be seen in some plans currently under way.

What appears to have happened is that the post-WWII theory of comprehensive urban and territorial planning has ceased to be valid. It was based principally on the following tenets:

1. "One system works everywhere", leading to the application of the same models in very different circumstances and conditions.

2. The planning discipline operated according to the idea that there was a public good to be protected, in the service of which cities and territories were provided with specific "laws" for the development of planning.

3. The principle of top-down dependence, according to which the national plan establishes the guidelines for the regional plan, and the latter for the municipal plan, etc. This apparently highly rational outline is no longer viable and the real value of the work lies in the diversity of planning scales and multiple mutual feedback. Only this practice, involving the overlapping of scales, but also rigour and competence on each specific scale, can ensure that decisions are taken and urban processes be channelled in the most appropriate way at each level.

4. The master plan tended to be comprehensive and binding on the entire urban process, whose evolution was contained within the final "image" offered by the plan. It is presented as a strong, unambiguous instrument that establishes all aspects of urban development and transformation. It leaves little space for subsequent work and sometimes includes "shadow" proposals that can have a negative effect on many parts of the city that are subjected to a process that is never actually carried through.

Formal and symbolic content

Master planning is an activity with a strong collective impact and also, to a large extent, an act of communication. It represents the communication of contents that are little known by many, who will interpret or use them in the future.

Much of its strength lies in the capacity to summarize in images and/or ideas the general field of urban planning. The use of graphic and alphanumeric language systems contributes symbolic forms that are capable of revealing new dimensions of the city or territory in the mid-term.

The master plan evidently involves a component of interpretation of far-reaching social and historical realities, without which no proposal should be formulated. These summaries must serve to understand the legitimacy and appropriateness of the proposals, but this does not mean that the project is deduced from them. They inform many of its conditions but other reasons must be found to explain the formal, physical and spatial decisions for a specific territory. We might say that the future "has no form", which has to be created on the basis of the appropriate development of one or more projects, among which the master plan plays a leading role. Historically, the master plan has had a marked iconic content that make its interpretation global and relatively clear.

Later, the plan became more traditional in the sense that it became more difficult to understand its iconic content as other factors gained importance in its formalization. Words might even be said to have as much value as images, which often vary accordingly.

This is the case, for example, of zoning plans, which had a major impact on the social control of spaces and their economic valorization. Zones and norms call for a system of codes to be established in order to ensure an unambiguous reading.

Its management, in turn, is defined as being so complex that a plan requires the creation of large planning offices—with the pipe dream of ongoing planning—that often (there are some exceptions) merely maintain their own existence, with no obvious contribution to a substantial improvement of the city in question.

The loss of prestige of the master plan led to the emergence of an unbridled liberalism that exploited these liberalizing currents and "everything is possible" became the watchword in circulation to save cities. Some resounding failures, such as the early period of the London Docklands, made it necessary to rethink these strategies. It was a period of pessimistic, almost tragic town planning, incapable of addressing the problems since the apparent "solutions" only made things worse.

The development of the majority of cities might be said to have been carried out mainly by means of traditional plans, turning practice into bureaucracy and mere administration, with the loss of its creative, thought-provoking component.

Today there is a move to introduce new attributes into the drafting of the master plan.

The aim is not to recover the initial iconic capacity to overcome all limitations, but there is a marked decision to clarify contents and proposals in order to facilitate comprehension. The iconic dimension is now used to clearly show examples in the form of suggestion or to present the advantages of the links proposed, whereas zoning becomes more processual, or seeks to find the compatibility of uses rather than their exclusion, etc.



Analogical models and present-day urbanism

The implantation of the master plan is almost total in very different cultures and traditions. Planning as the action of forward thinking is recognised as a need in very differing societies and political systems. It has been a "global" instrument since the 19th century and, in practice, was associated with the idea of social and cultural innovation and, therefore, the subject of discussion in the selection of certain urban planning actions, also having a high ideological content.

It is important to see the evolution of the master plan as it capitalizes the social recognition gained by this cultural and professional activity, while seeking to reorient urban territories towards new economic and institutional dynamics.

In reality, the practice of modern urbanism has produced a broad repertory of efforts that ensure the applicability of this form of urban project.

Firstly, social recognition of the task of planning as an essential system to prevent unbridled speculation and achieve sustainable development is a framework condition to be retained and channelled appropriately. Secondly, its baggage of models and referents has created a system of language and some valuable codes.

Modern planning laid down some general patterns that can still be seen in many of today's outlines. A series of very abstract analogical formal systems were created that served to explain what the process of the plan set out to achieve; the small print of the plan will be much more complicated, but the relation between the target to be achieved and the forms required do so can be communicating and understanding.



The possible role of the master plan on Antwerp's large waterfront

I should like to highlight the possibility of integrating urbanism's design experience. Here I refer to its capacity to generate a large body of reflection on urban form and its processes of modification and transformation.

If we see the plan as a series of projects produced by other specialities or disciplines such as engineering, landscape, urban architecture, etc., we are stripping it of its capacity to contribute its own specific investigation into the overall scale of the city or a large territory thereof, or into the scale of the processes of urbanization and ways of coordinating actions to improve territorial insertion. Many tensions are produced outside the traditional city, yet we continue to think of it as a closed or closable object.

It is therefore a good idea not to overlook the urban project's capacity for discovery and creative, innovative proposal on this scale. Therein lies the methodological wealth of a long tradition that can be exploited as a working hypothesis to further the process. The abstract component of the project is still an innate quality, which the realism of the practice of "objectual" projects has often done little to improve.

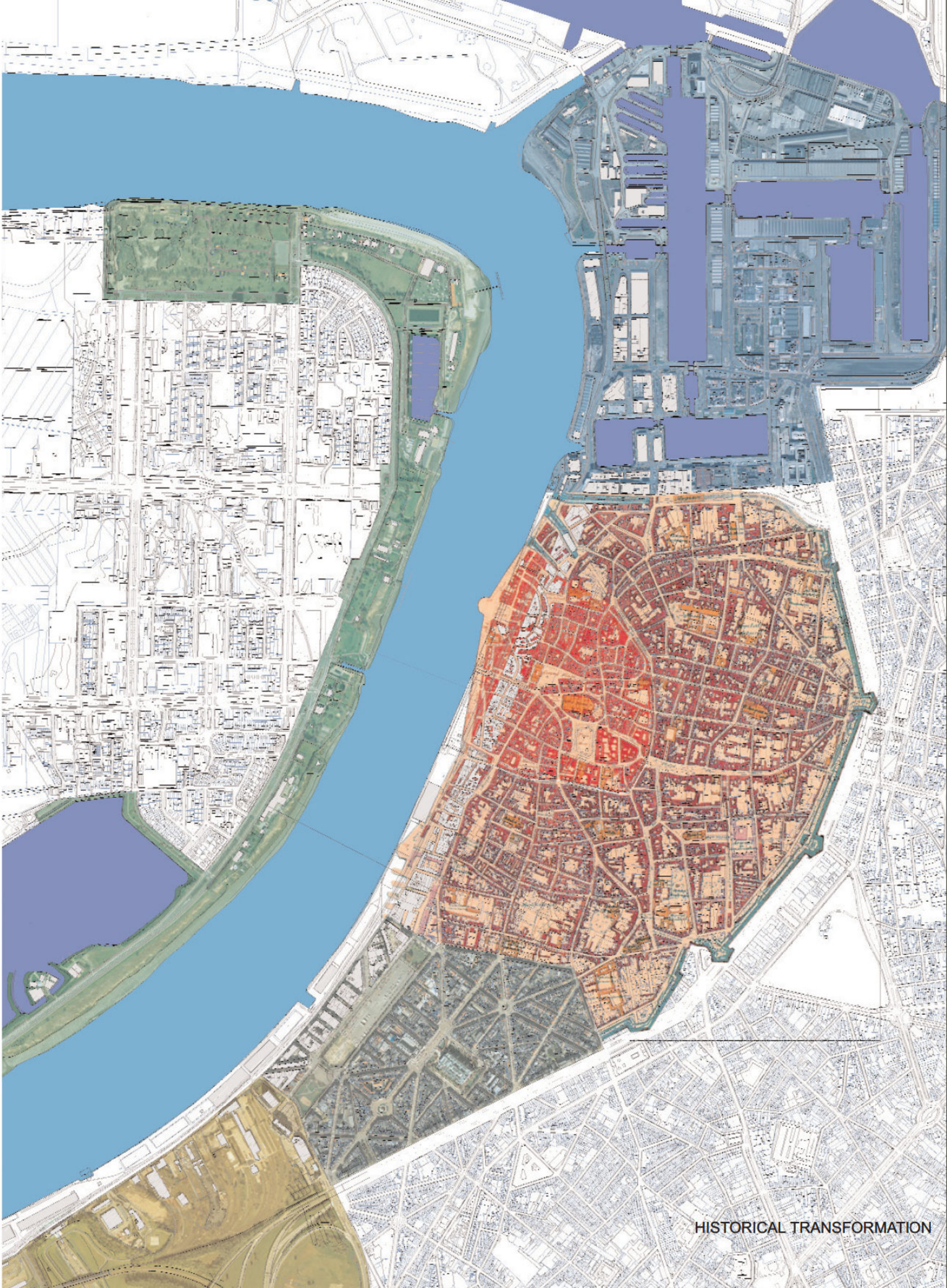
Furthermore, one of the key issues is to define the correct level or scale on which to undertake the restructuring of a territory, thereby ensuring the concurrence or superposition of scales and contradictory planes to which we are becoming accustomed.

However, it is important not to forget the plan's proven capacity to:

- a) Establish ways of transferring or re-balancing services and/or quality between parts of the territory.
- b) Suggest more innovative forms of development, which only on the more general scale can overcome the specific difficulties of specific sectors.
- c) Seek more appropriate forms of intervention, establishing programmes of collaboration that, with their capacity for urban development simulation, can be more transparent and efficient.

This is, then, an ambitious proposal within the vast disciplinary tradition of urbanism. In today's situation, its rigorous review offers a field of research with regard to the riverbanks of Antwerp. It is here that we will find the most exact data not only of the reality but also of the tensions and initiatives that may occur in the mid-term in each urban fragment, because it seems important not to relinquish the operative capacity of the scale of the master plan to improve the city and its urban territories. And this is the proposed means of once again reconciling Antwerp and the Scheldt.

A master plan has to represent an opportunity in terms of the contents of the proposal and project, but not just that: it is an element in the overall vision as seen from the river that has to give coherence to certain general decisions and, above all, to interventions along the river.



HISTORICAL TRANSFORMATION

A- SPECIFIC RESEARCHES

GENERAL ISSUES FOR ANTWERP'S RIVERFRONT

A-1. Evolution of the riverbanks

The forms of relation between the city and port of Antwerp have provided the subject for many historical and urbanistic studies.

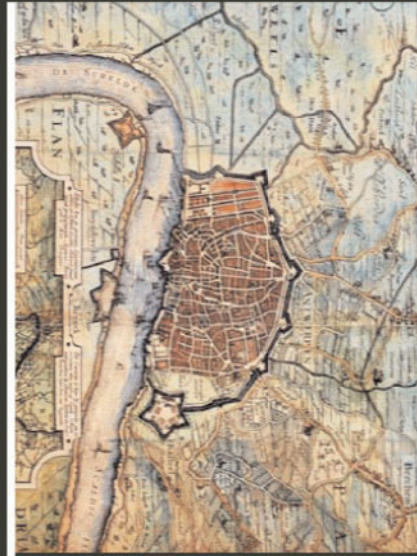
For our team, a new study of the theme served to produce a personal reading on the basis of existing approaches. Despite its apparent redundancy, this procedure is capable of introducing a new interpretation that helps us to understand the present-day situation.

To summarize, this reading highlights the evolution of:

- The forms of communication and transport.
- Linear and cross systems.
- The interrelated interests of the city, the port and the water.
- The moments of opening up to the city's hinterland with suggestions such as Jaussely's "Golden Ring", following Stübgen's model for Cologne in 1880.
- The construction of the system of open tensions existing in the existing territory.

This river-based interpretation presents specific capacities as opposed to a global approach to greater Antwerp, which necessarily addresses multiple focuses, in which the riverbanks are one element more in the whole.

The decision to produce a multi-scale reading from the viewpoint of the river and its banks appeared to be the most appropriate to inform this project.



1528

1540

1572

1616

1624

1657

1722

1775

XVth century

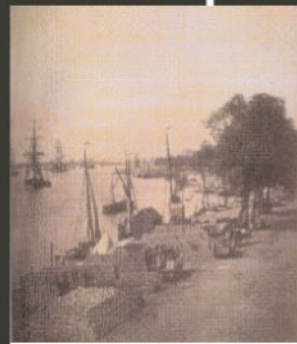


XVIth century



XVIIIth-XIXth century





1803

1852

1875

1885

1911

1957

TODAY

XIXth-XXth century



TODAY



SCHELD T



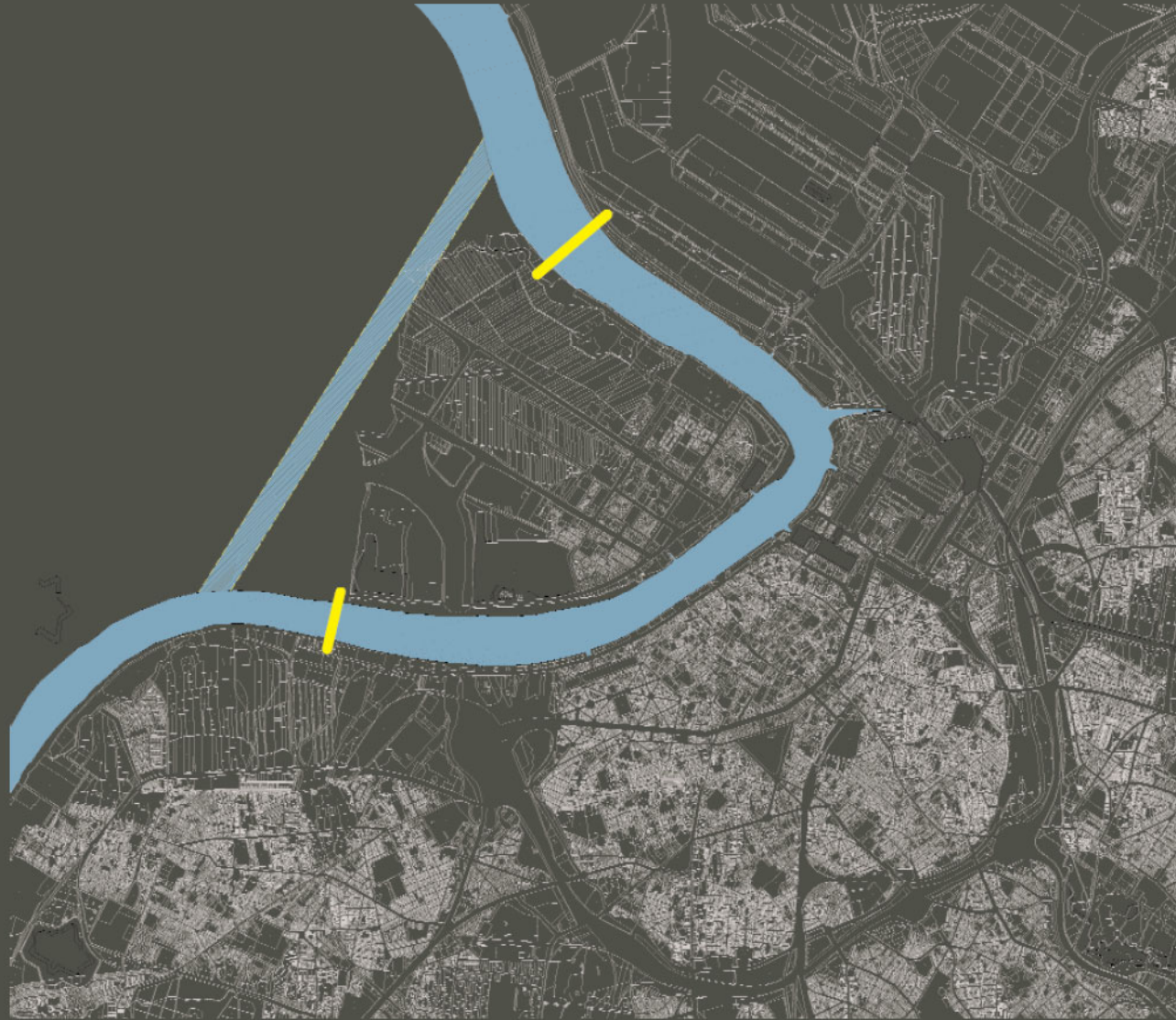
A-2. Forms of containment

Antwerp is a city situated on a large delta in a strategic position, and the city-harbour relation must be placed in this delicate balance. The forms of containment are therefore fundamental.

It is understood that the possibilities of a shortcut in the river on the left bank beyond Antwerpen West have been duly considered: because a spillway in the delta space and locks in the south of the city could be an effective solution to many of the flooding issues, maintaining the functionality of the river and of the harbour from the north.



DELTA SHORTCUT



This question is very much present in the evolution of other harbour cities such as New Orleans or cities on large rivers, such as Vienna, where the form of organization of flows has marked the urban planning development of the riverbanks.

Having made this point, the up-to-date studies of the Sigmaphan demonstrate the advisability of raising the high-tide level from 8'35 m to 9'25 m.

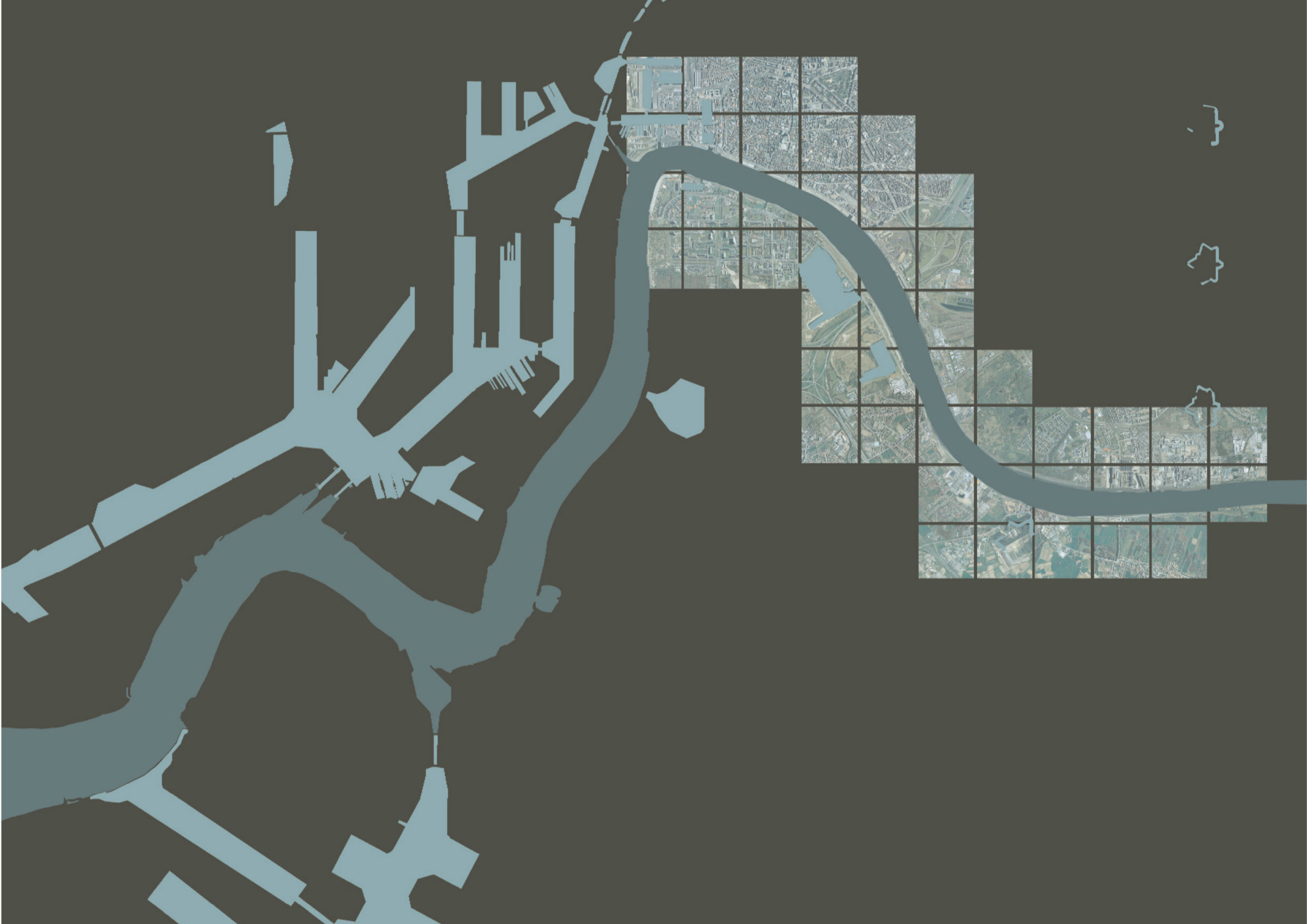
As we will see, this is an important change because, until now, the initial protection level (8'35 m) has not been duly integrated into the urban topography and the present-day level (variable, but around 7'00 m) of much of the quay areas should be raised to the proposed level of 9'25 m.

This proposal comes at a time of marked abandonment of the port and its related urban activities and can therefore be seen as one of the driving forces of a larger urban transformation. The introduction of water safety levels could be a positive argument for the implementation of more stable civic uses beside the river to create an attractive façade for the use of citizens and visitors.

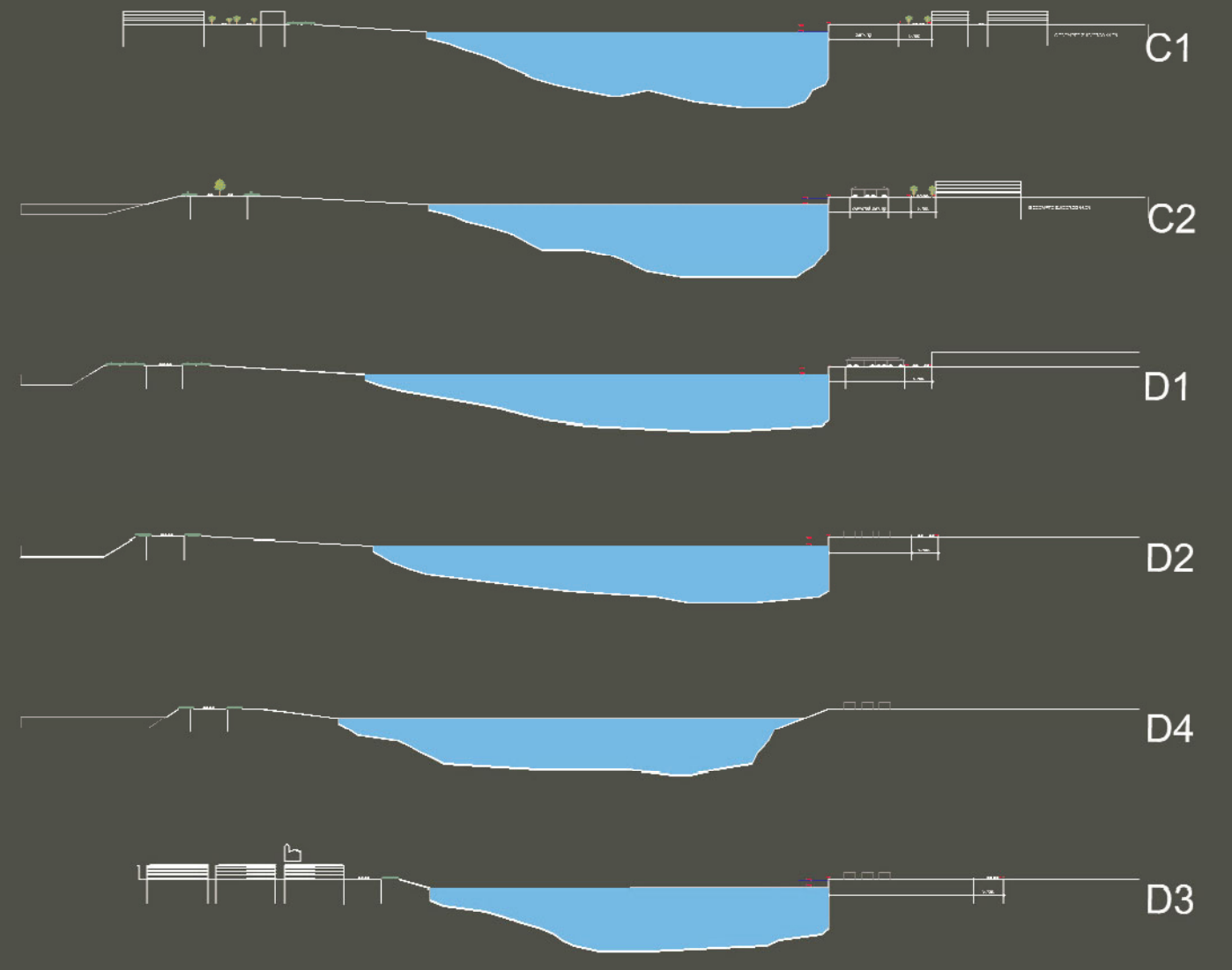
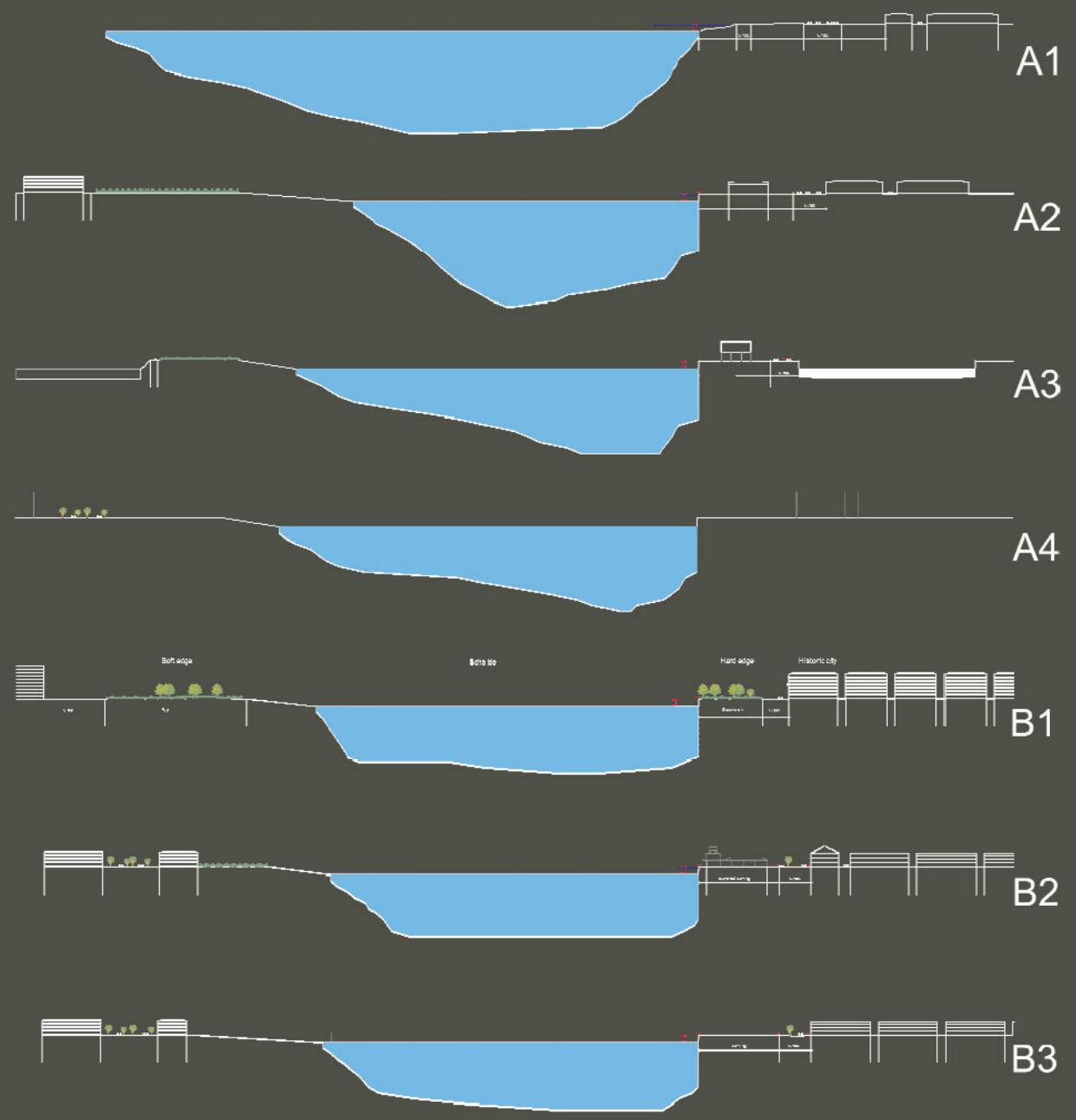
The forms of contention of the two banks are very different (wharf on the right and open landscape on the left), producing an asymmetry that has been very valuable in marking the general form of Antwerp. In the future, however, both banks could have more urban uses, establishing a new system of more fluid interrelations.

Systems of physical relations will also be explored, such as new bridges to be added to existing tunnel and mobile links, emphasising forms across the water that will find their potentiality with more functional mooring systems.

There must also be visual systems of inter-riverbank relation (explored in the next section).







SECTIONS OF THE RIVER (5X=Y)

The evolution of forms of containment has been closely linked to the uses of each particular moment. In the future, it seems to fall to civic uses to exploit this great panoramic vantage point over the river and the delta, expressed in the left bank landscape, and the frontal view of Antwerp and its varied and constantly evolving built systems seen from the left bank.

The forms of containment must not turn their back on the river dynamic of the Scheldt. Their relation has to be understood in terms of the outline of the river, the variation of the river's depths in relation to its layout, and these relations have to be taken into account when addressing containment, as well as the use of the edges most in keeping with the general river-city dynamic.

The right bank can be seen as a superposition of historic urban projects of different scales and scopes, which do however produce a very rigorous, well-defined space. Its layout follows a very precise geometry with areas of large diameters (between 20km and 3,5 km) and an almost constant width of 100 m, configuring a unique opportunity for Antwerp.

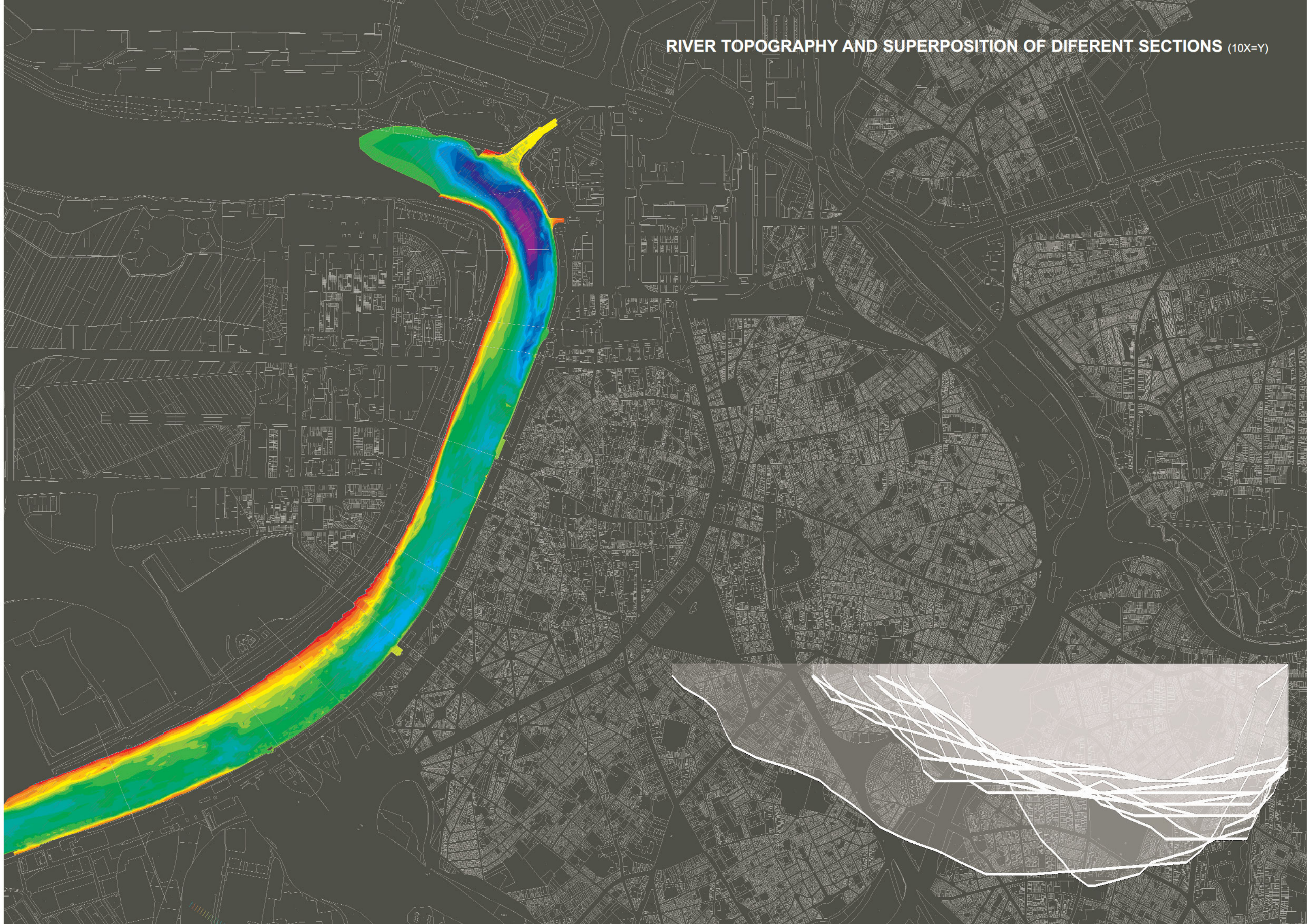
The project addresses a repertory of situations in "section" that establishes transitions between the topography established by the city and the new topography of the quays, as well as the river's characteristic form and dynamic. A design involving this "variable section" would incorporate new values of urban infrastructure into the form of containment.

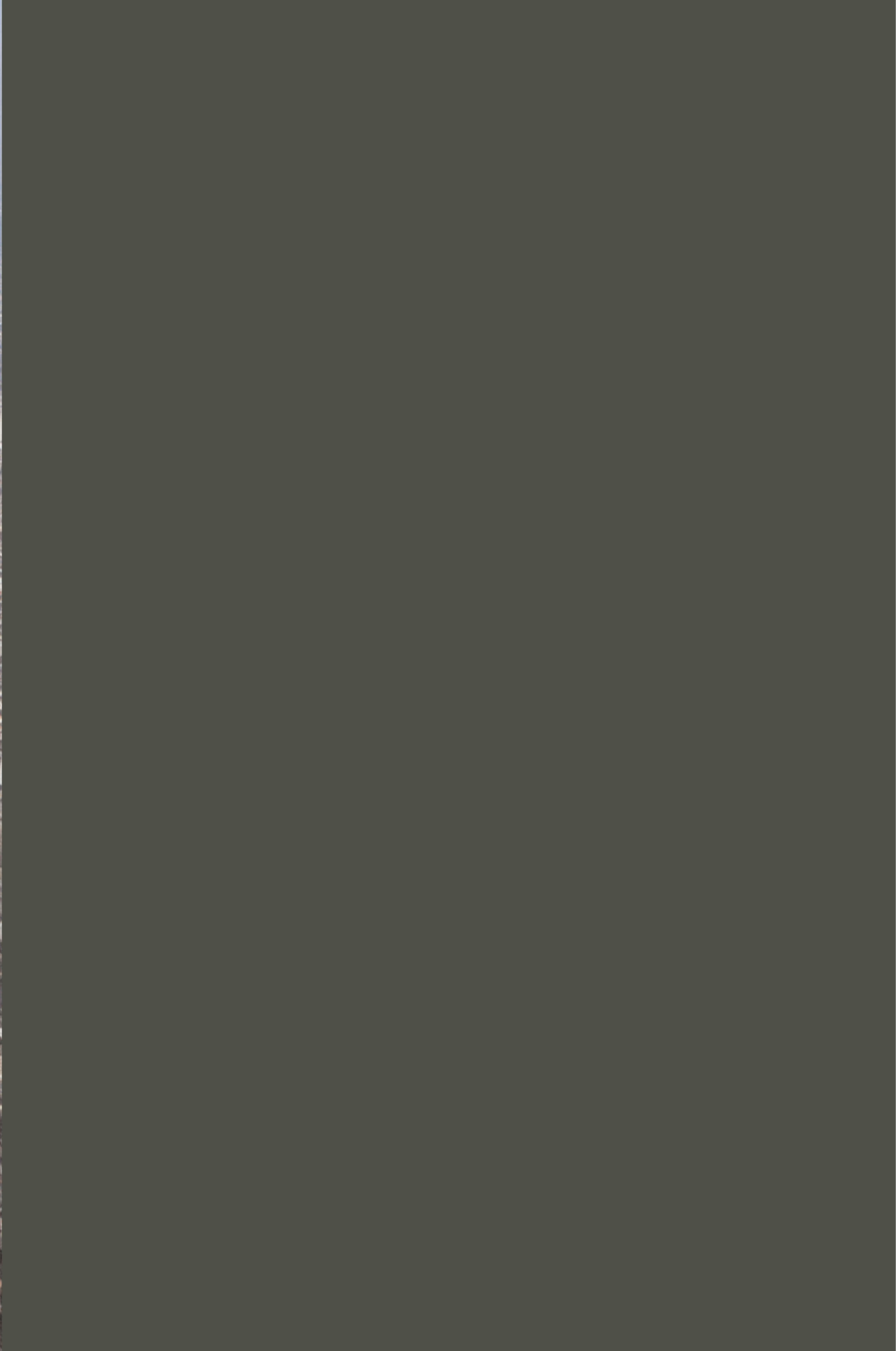
The attached sketches explore the possibilities of services, including a car park mainly for existing activities in the centre, to prepare the topography for a new landscape that could constitute a system of urban parks along the Scheldt. The restructuring-rehabilitation of the quay must be included in the different project phases. The new project envisages studying its development, at least partially, in the new topography in order to highlight its integration into the general project for the city.

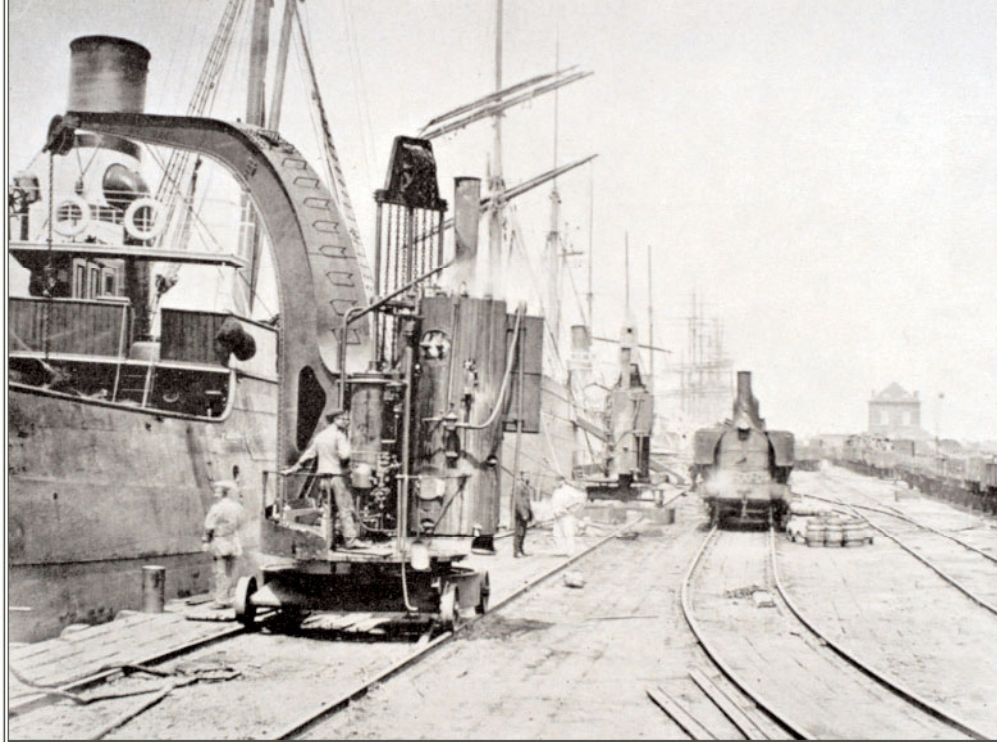
The left bank could offer other ambitious uses and decisions. The urban development carried out in the last five decades could be said to have paid little heed to the river. The residential layout has been considered separately and independently from the river. This could be a chance to clarify, by means of the new landscape, forms of relation between the existing landscape and the river and the historic city, without seeking to impose a compact city model, though introducing some small infill interventions to produce a more attractive relation with the Scheldt.

The containment carried out with the landscape and small service implantations must mitigate the visual and formal "break" represented by the road on the left bank. The way to address this is as a parkway, making it easy to cross for pedestrians, bicycles, etc., creating at least visual and landmark points of relation with the traditional city. This type of intervention must seek to recycle much of the existing road, but it does call for the corresponding study.

RIVER TOPOGRAPHY AND SUPERPOSITION OF DIFERENT SECTIONS (10X=Y)







A-3. Infrastructures: river and city

Forms of relation along and across the banks are highly explanatory of the uses made of them at each point.

A study of the modern period of this relation shows the process towards the present-day potentiality, not because there are currently no flows, but because these forms of relation can be “rethought”.

Today, the quay space needs a new structure for both its spaces and its uses and movements, as well as for its water-related functions, explained above.

This condition of vacant space gives it a rather unattractive but expectant use. Furthermore, traffic and car parking are the protagonists here.

Examination of the city’s macro functional structure suggests that the banks do not necessarily have to play the role of a place of passage or for through traffic and that they could instead offer local access and be a destination. The banks have acquired their “central condition” in the course of history and it needs no endorsement.

This project therefore analyses different possibilities of access for the various forms of mobility, and even considers the alternative of a partially subterranean through passage, making the most of the new section required by containment, though an initial evaluation does not consider this alternative to be the most advisable.

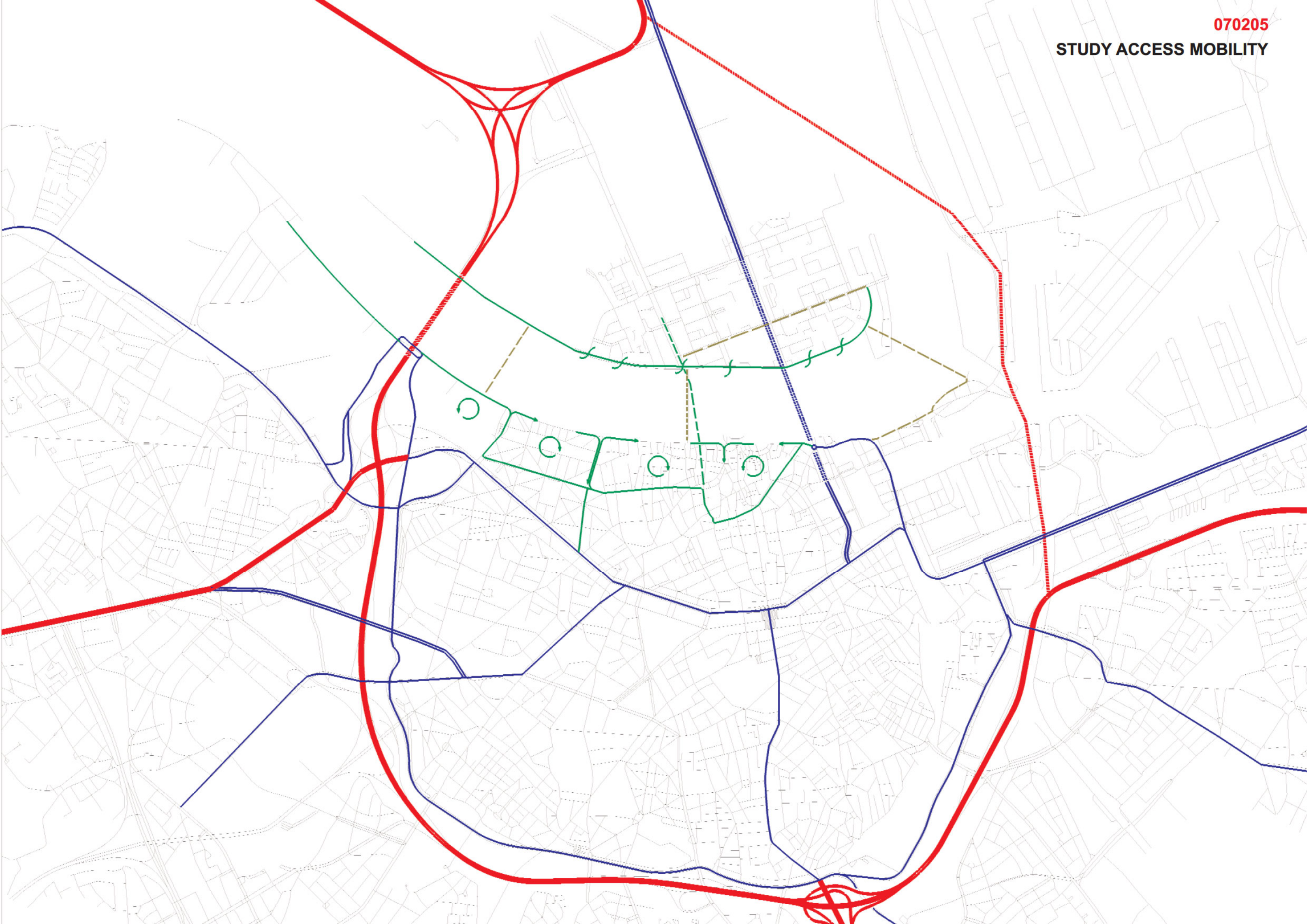
The forms of access on the left bank are different, and softer, more dispersed uses could still need support for private forms of mobility, though guided by the possibility of soft means of mobility.

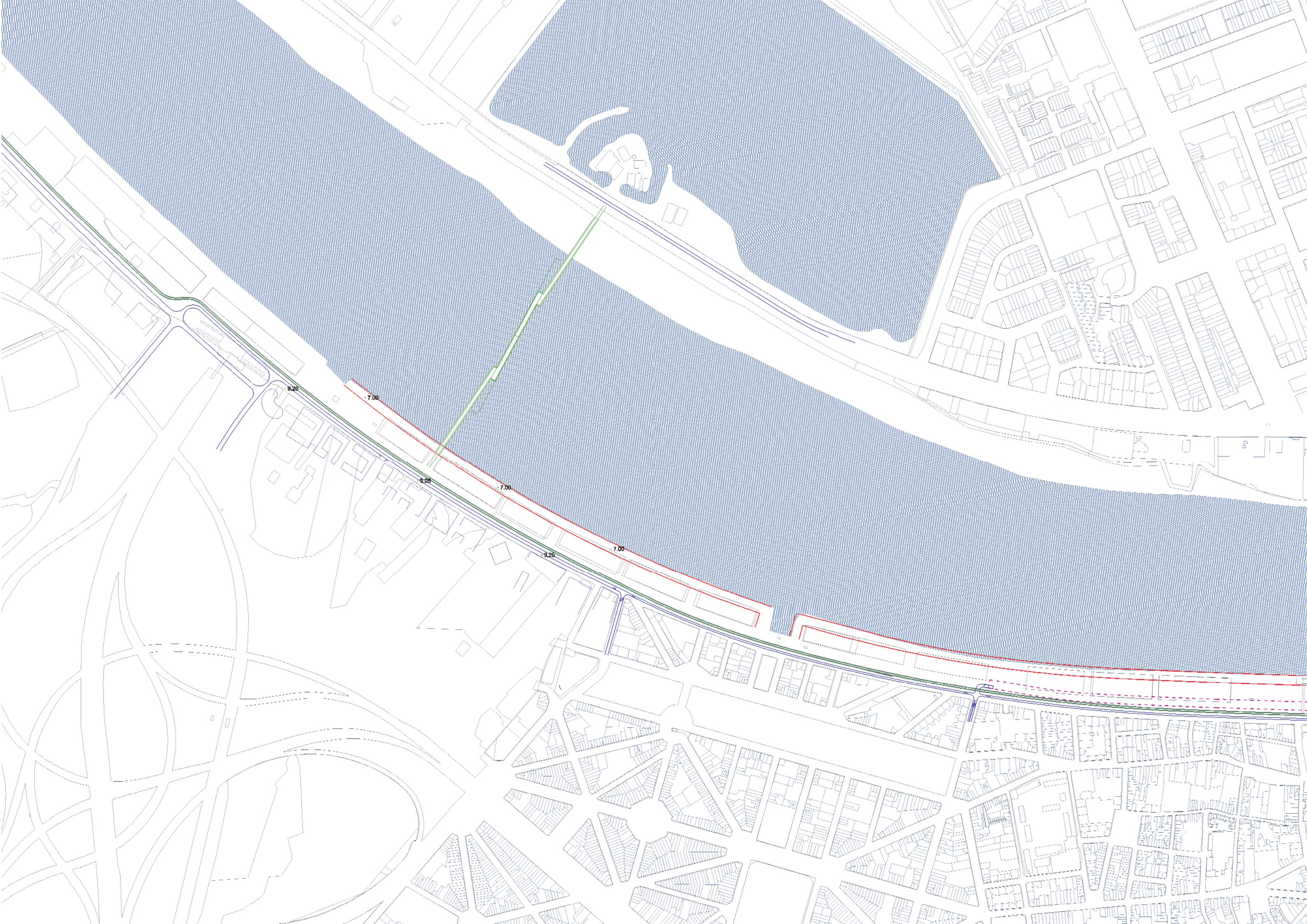


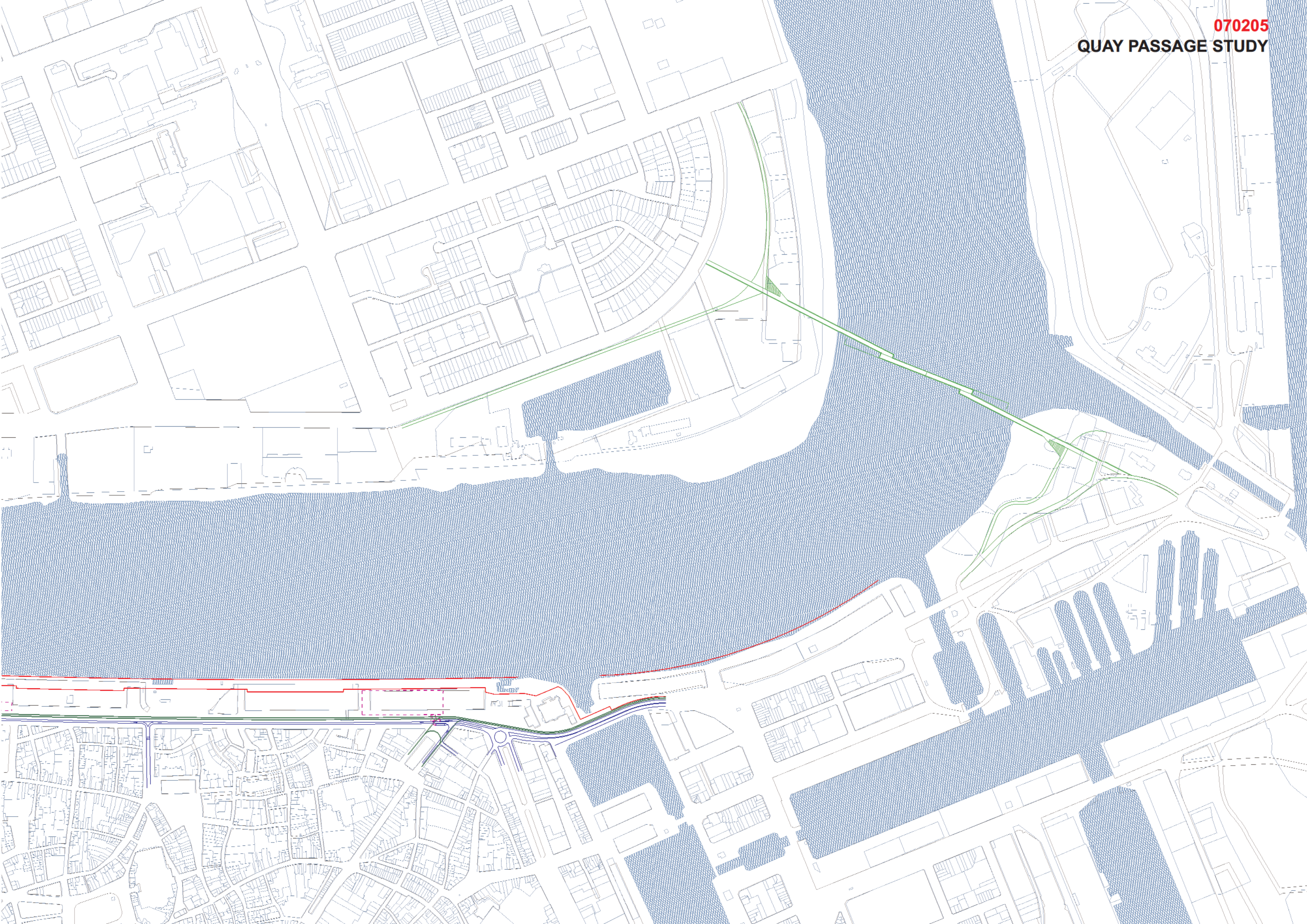
CITY, HARBOUR & MOBILITY





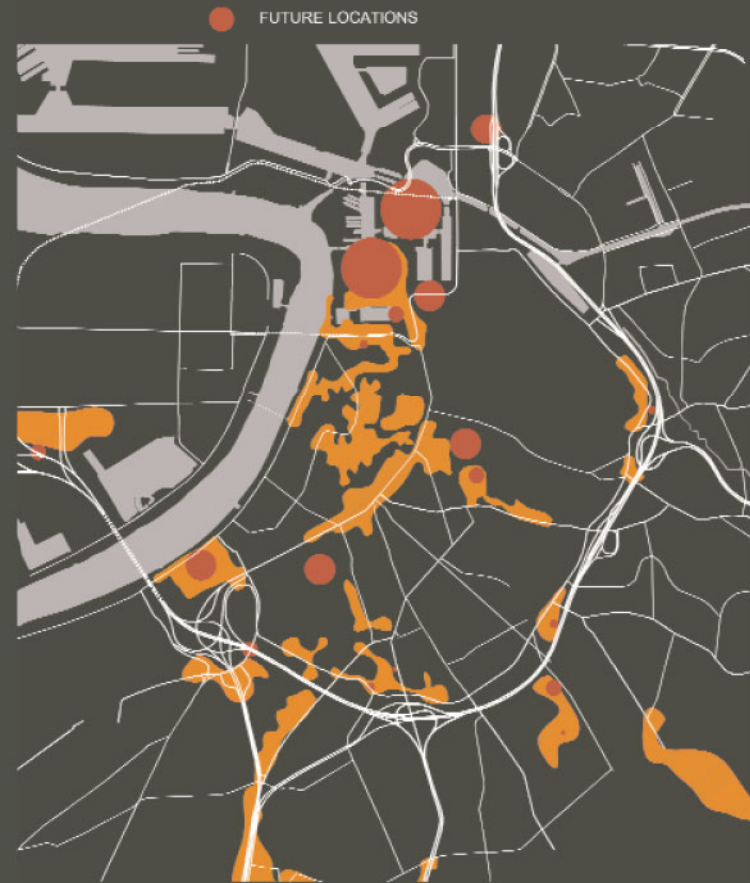




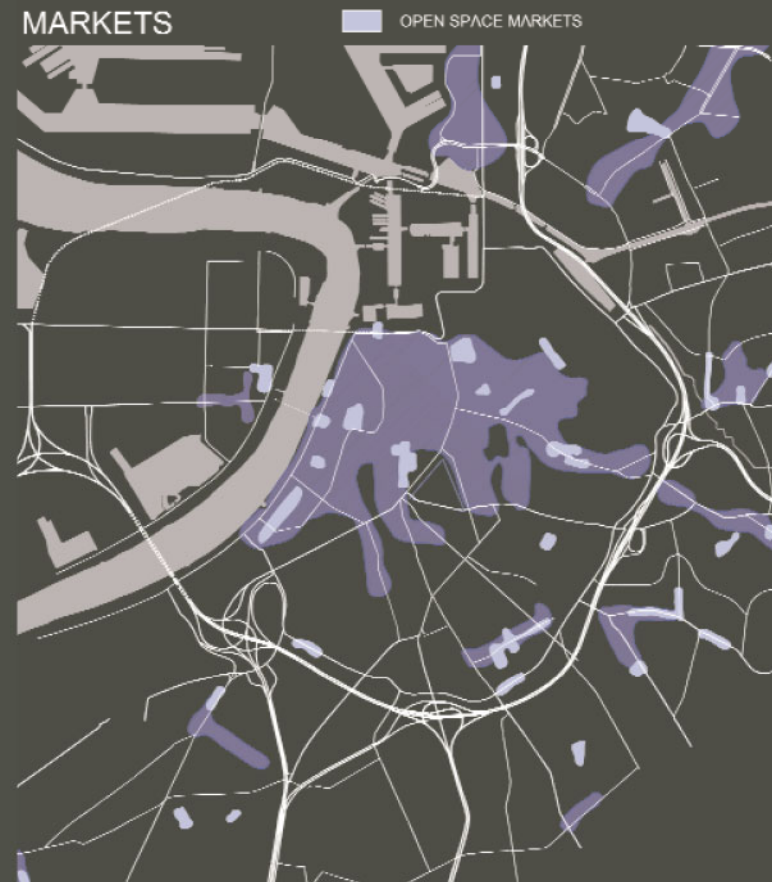




OFFICES



COMMERCE & MARKETS



A-4. Main functions and dynamism

The banks do seem to be occupied by “through” flows, and only at some points is it the bank itself that is an attractor for use.

This twofold condition should be gradually inverted, by:

a) making through flows less necessary and frequent, devoting the banks to soft means of transport and mobility (train, bicycle, pedestrians), and

b) increasing the use and functions of the banks by means of a strategic selection of complementary activities that once again attract the city towards the river.

The master plan has to clarify these possibilities and create the right “conditions” to make this possible. This calls for an appropriate valuation of both the access mechanisms possible in the mid-term to “disengage” the quays and of the most available spaces of opportunity. This has to take into account the differing natures of the parts of the city behind the quays and the availability of public, private and corporate operators to intervene in this space.

In favour of this method, the availability of land and its public ownership enable the conception of clear, open spaces for franchise of activities associated with well-defined periods of time.

Another potentially favourable factor are the side spaces to the north and particularly the south that could help to channel a very positive change in use. The river must once again be seen as a dynamic, attractive space for new activities that can once more become the “centre” and the city’s preferred place for recreational and cultural activities, residence and urban economic activity.

Intervention on the left bank could be similar but on a different scale. This model should not be dense in built levels though it may be in terms of use, offering an alternative, complementary image that few cities apart from Antwerp possess.



STREET NETWORK

CIRCUMFERENCIAL STREETS

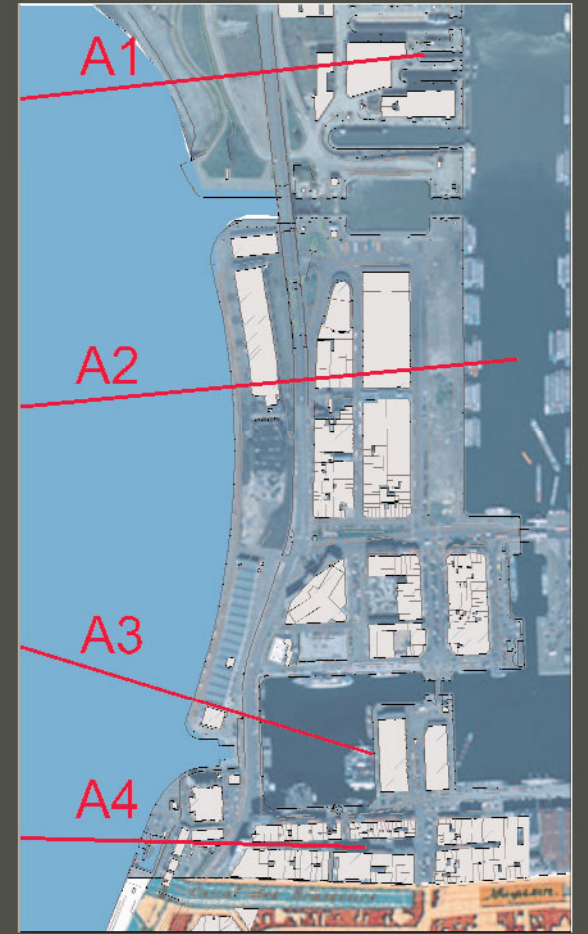


INTEGRITY LEVEL



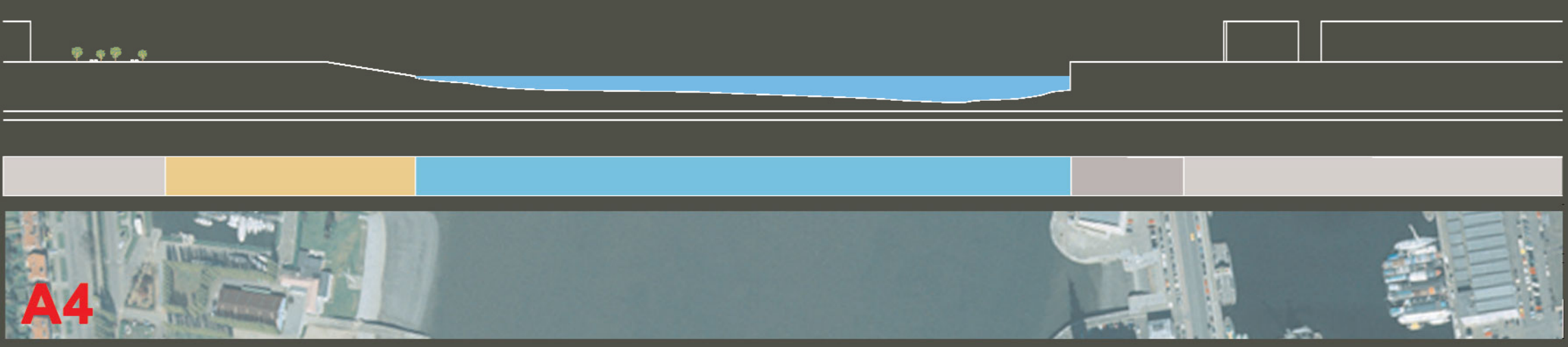
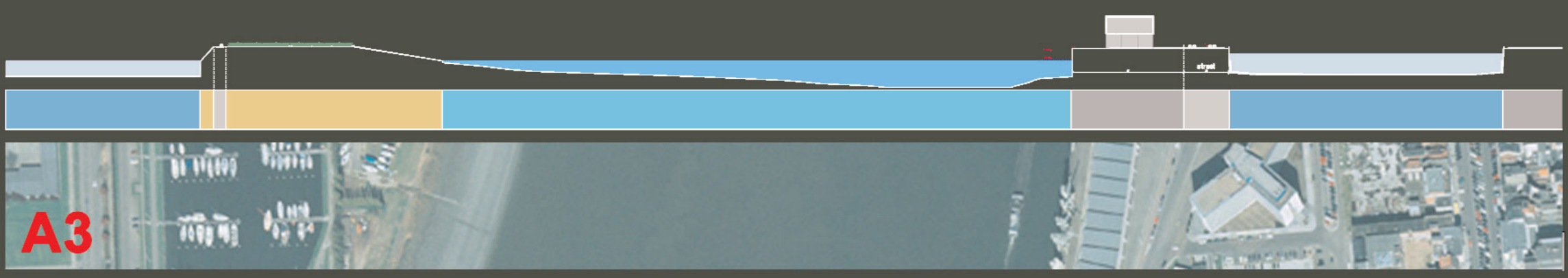
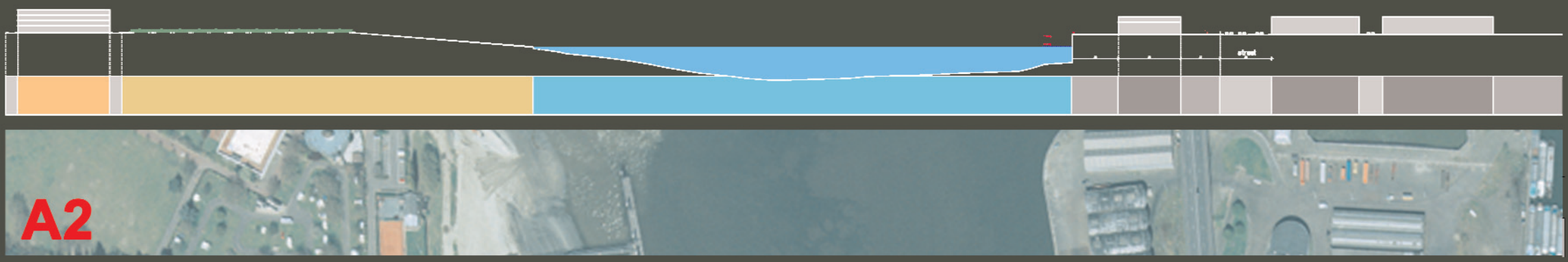
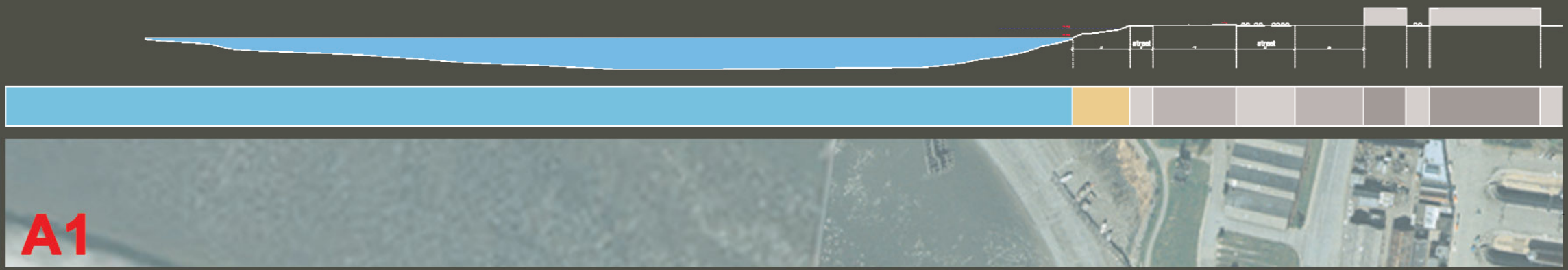
RADIAL STREETS

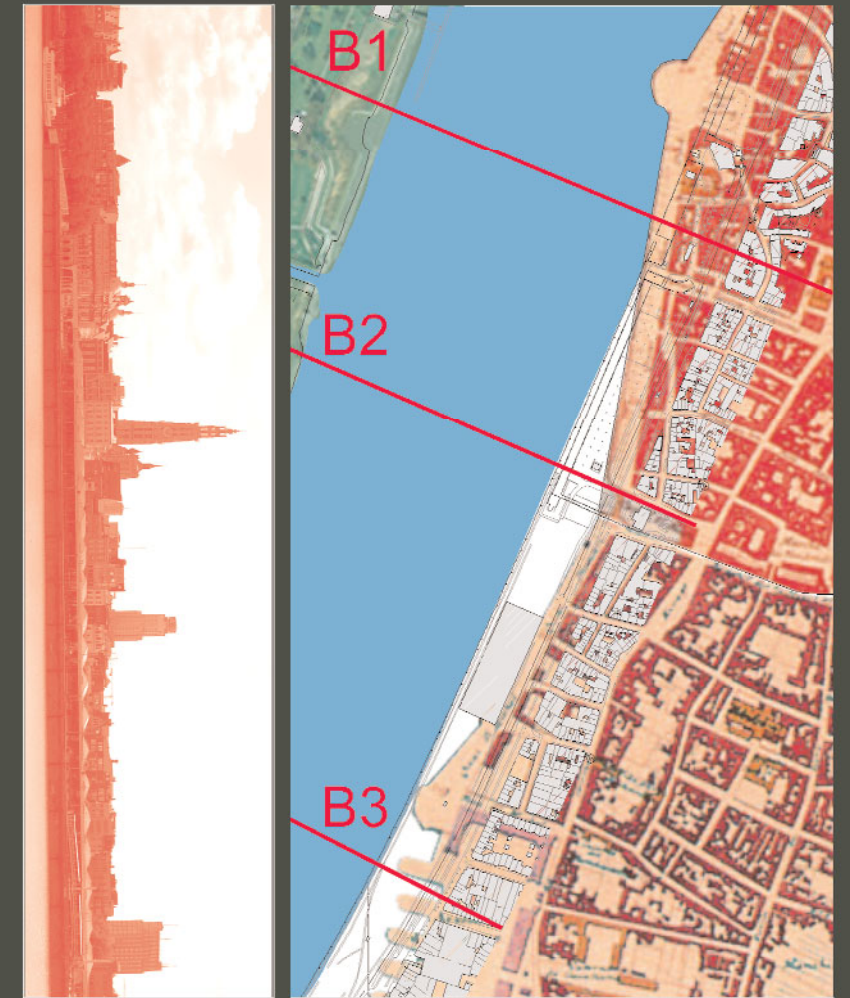




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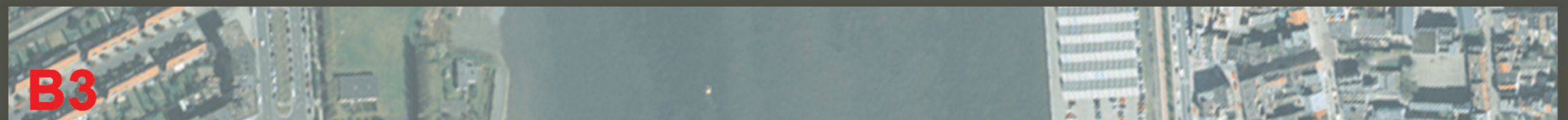
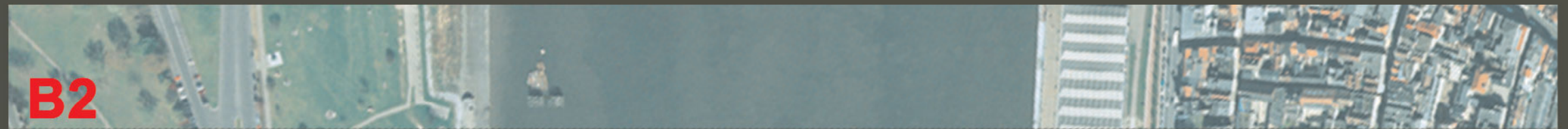
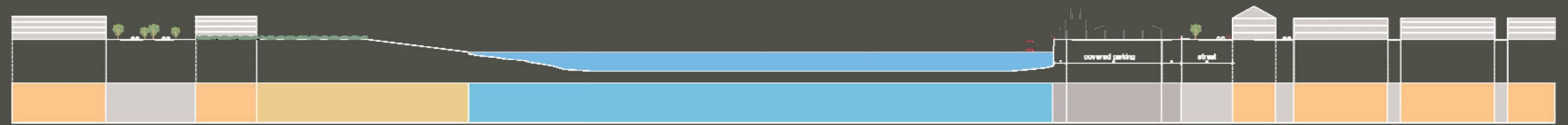
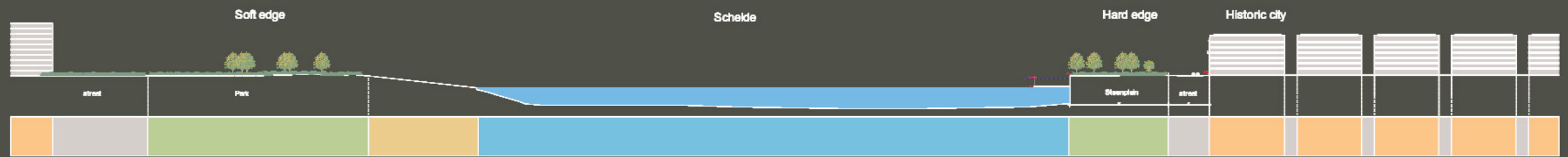


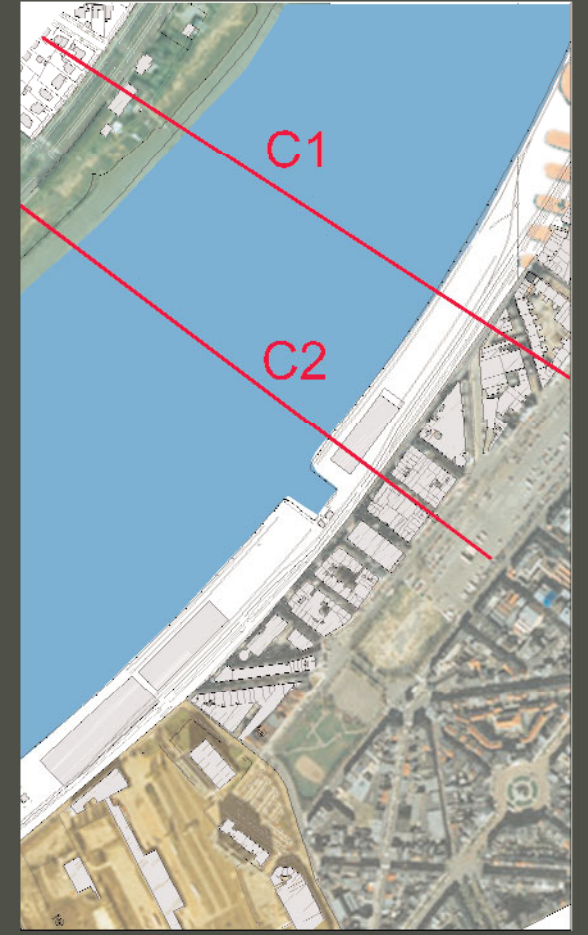




CENTRAAL

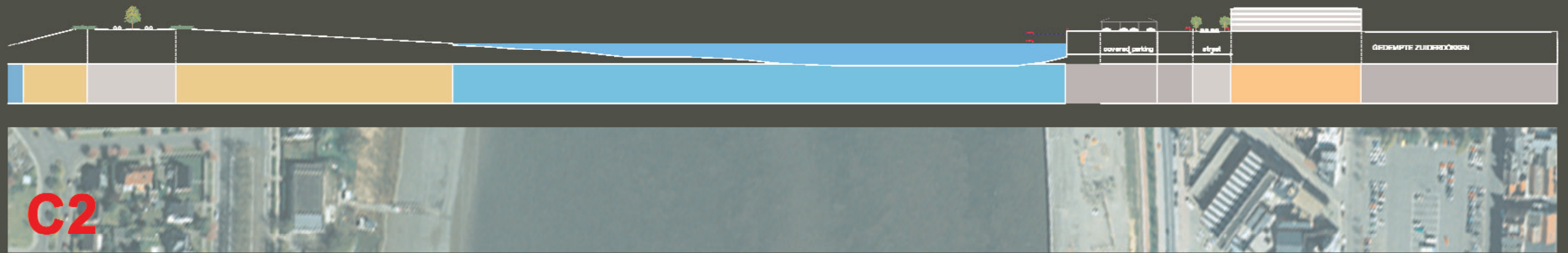
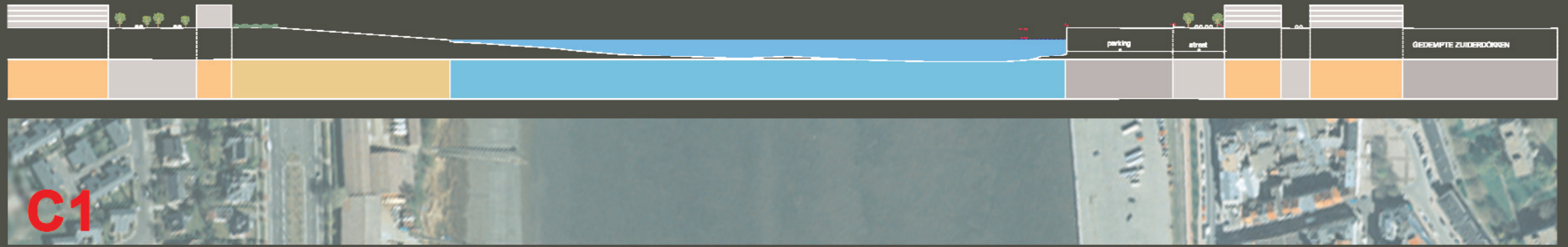






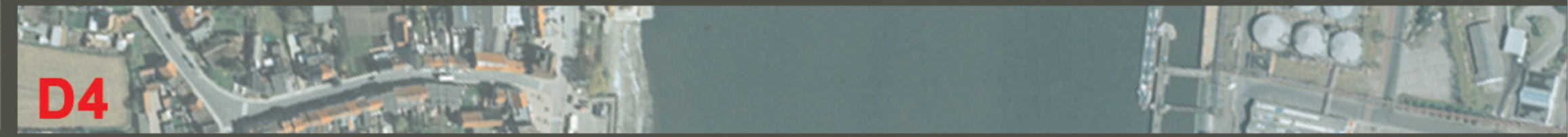
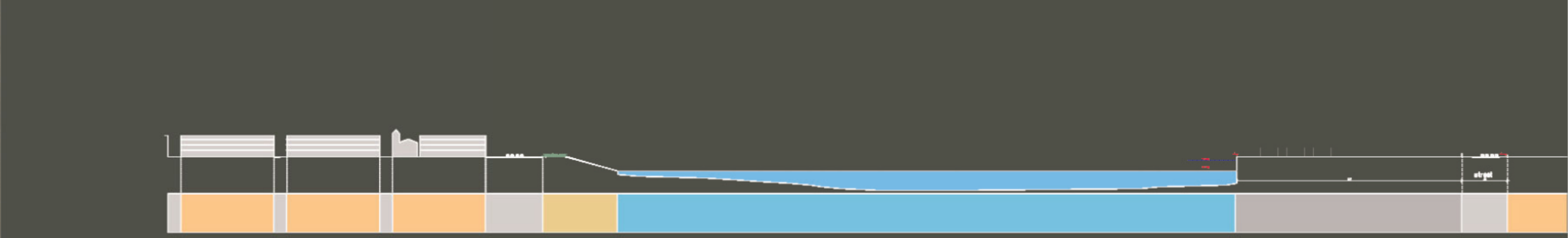
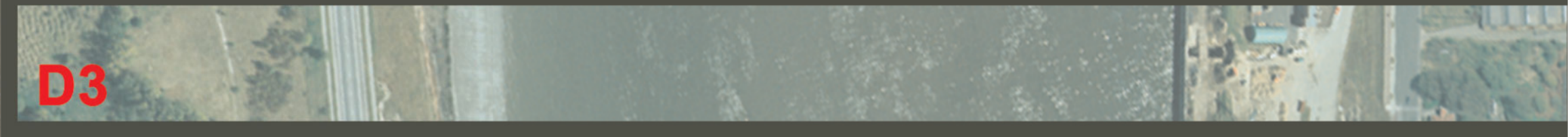
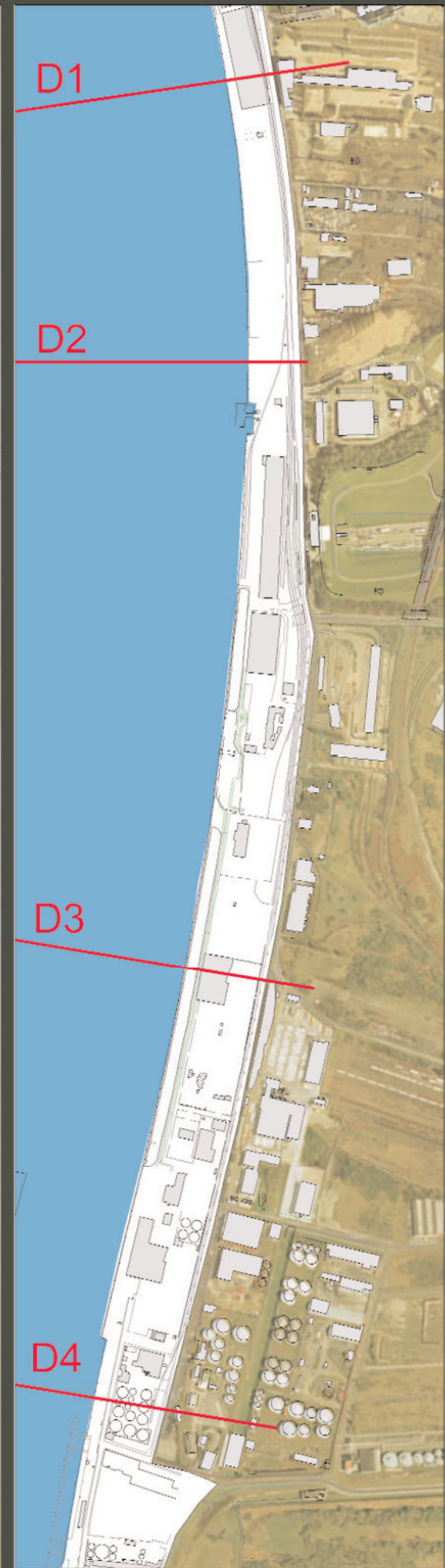
ST. ANDRIES - ZUID





NIEUW ZUID - PETROLEUM ZUID





B- VISIONS AND PROCESS OF THE MASTERPLAN QUAYS AS CATALYSER FOR A NEW URBAN DEVELOPMENT

B-1. The river as civic space

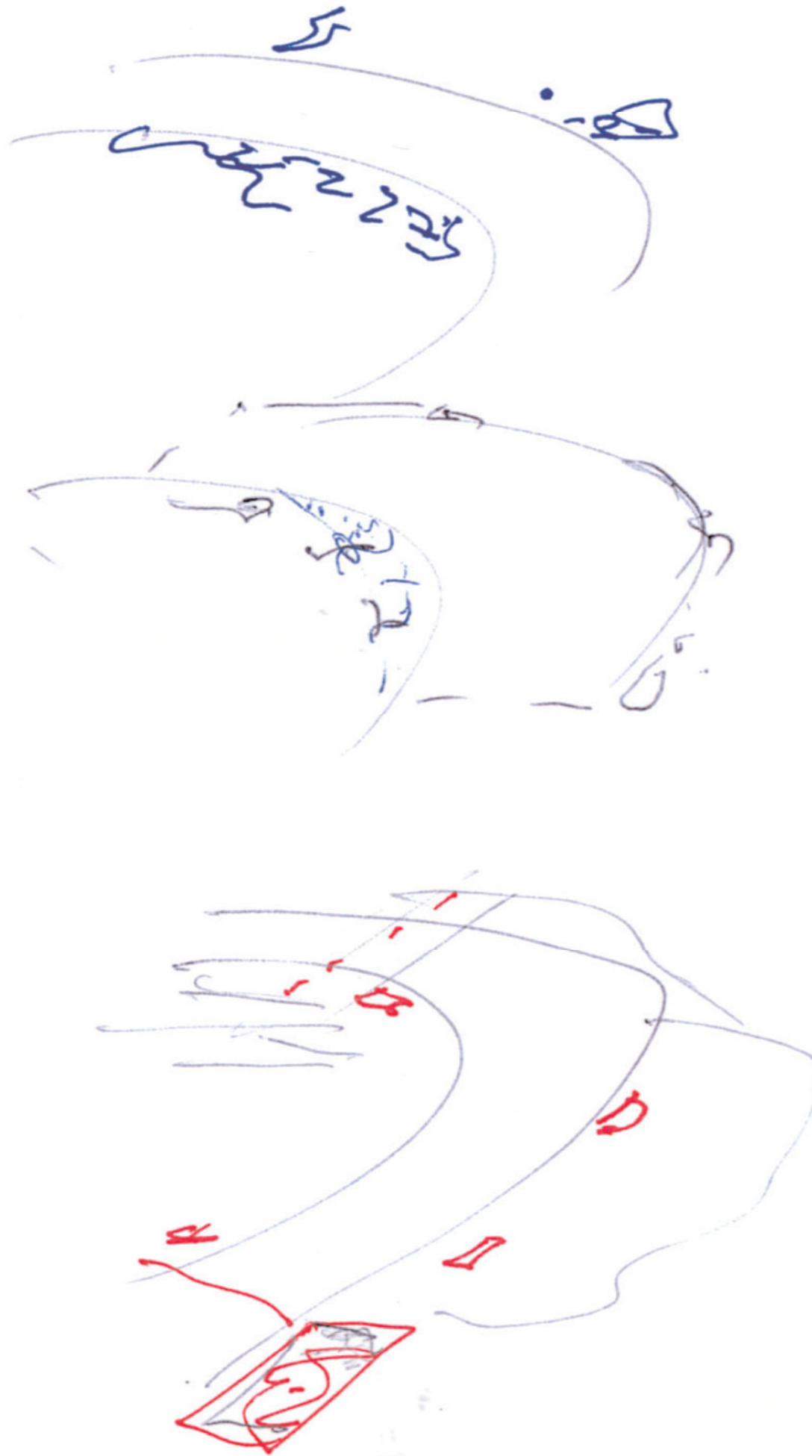
Following the above lines of research, which in turn are informed by substudies that will be carried out alongside, suggestions are being made for the continuation of research, but also for its conversion into real urbanistic project tools.

To this end, it seems very necessary to outline some hypotheses or explorations, explained above, to define some scenarios for discussion and serve as a test prior to the formulation of the master plan.

The selected scenario/s must lead to one or more model/s of urban intervention in step II that focus on both the specific instruments to be utilized and the strategic sectors and elements that can begin the regeneration of the banks. Among these strategic elements, containment will be a priority.

It will be in step III that these strategic approaches will take their regulatory and binding form, maintaining a degree of adaptability in their application in terms of time and programme.





As regards the formulation of some hypotheses, which should not be regarded as definitive proposals, it is important to point out the following:

1. The quays can be seen as catalysts for the urban development of the right bank, whether by recycling existing buildings and/or adding other new ones in keeping with the philosophy of a system of active "parks" along the Scheldt.

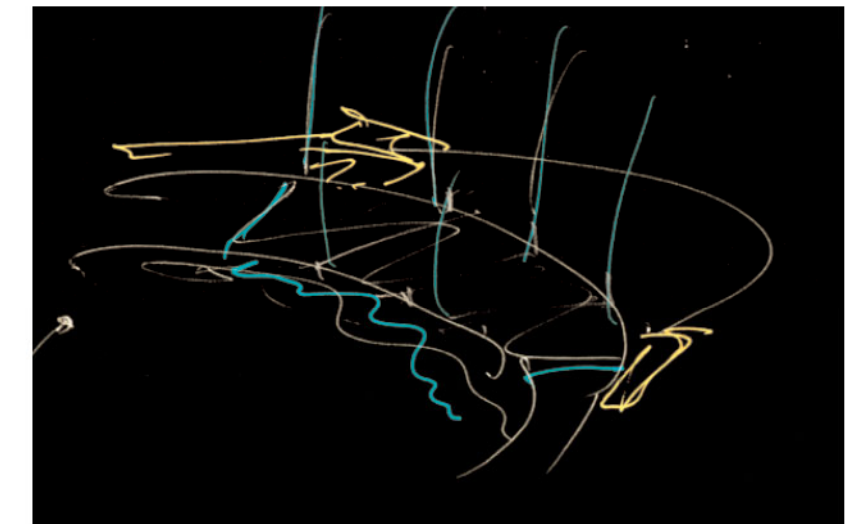
They will represent civic "beads" along the right bank, taking into account both the layouts of access described above and the possibilities of establishing new urban topographies for consolidated traditional Antwerp.

The proposal of a mosaic of active urban parks will encourage new relations with the traditional city and its history. The mosaic is made up of many parts and it is above all the space of the quays that unites them, producing an ambitious metropolitan project.

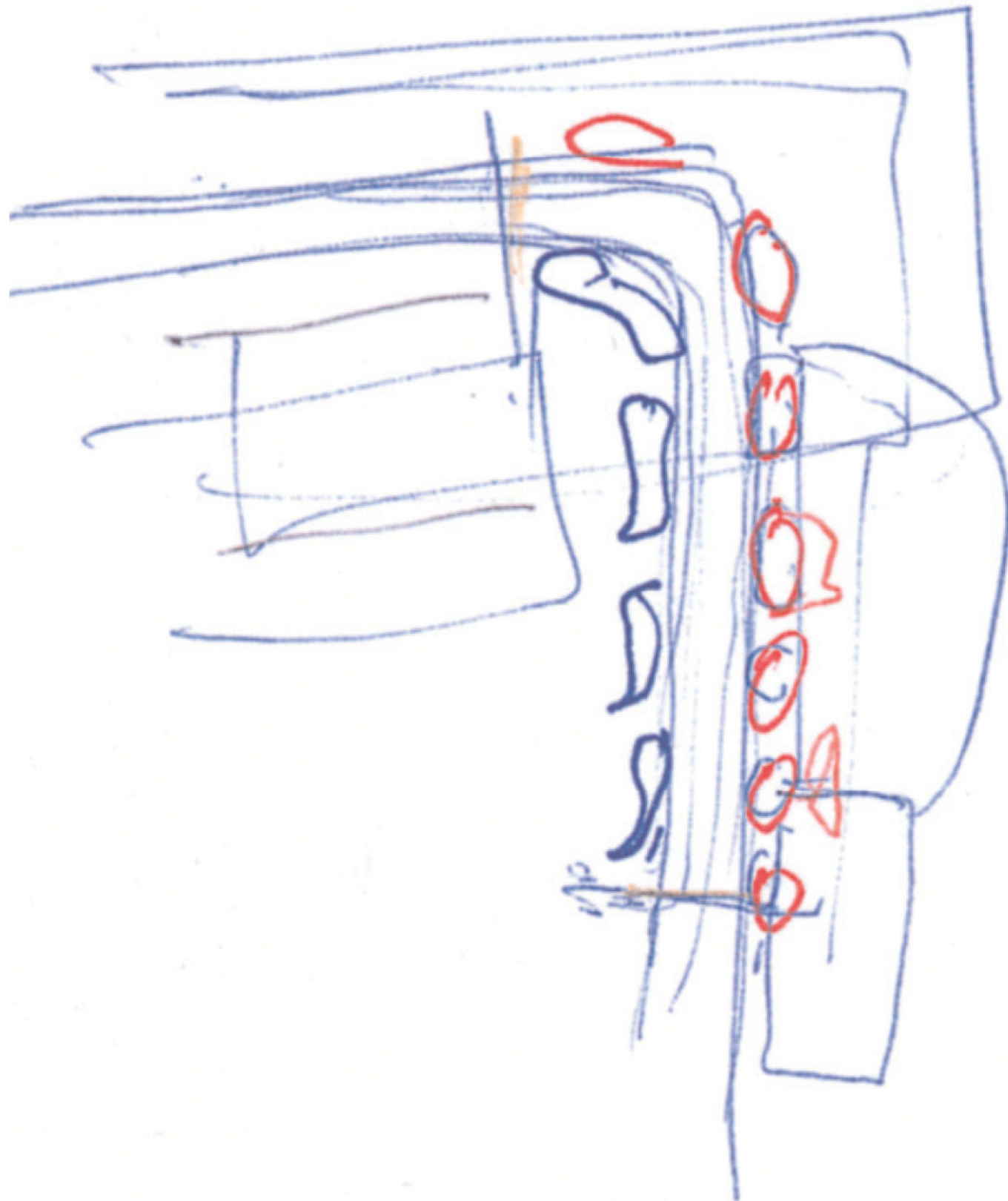
Here, the master plan will be a veritable urbanistic project that will have to show how the new topography can be a creative, unifying element, and how its condition as a predominantly public open space informs the planned civic character.

This **mosaic of parts** must respond to the new urban topography to deal with flooding, but also to the new condition of the quays, as for the first time in many centuries the city will have a civic use as a waterside citizen space, and Antwerp will experience the transformation undergone by the embankments of Berlin, Paris and London. Antwerp has the advantage that the asymmetry of the banks has the potential to make them both singular and attractive.

The pieces of the mosaic must enable the activities of strolling, observing, meeting, etc., and highlight the contact of the city's important spaces and history with the waterfront, the rehabilitation of port buildings, and even the creation of kiosks or buildings, for franchises of a number of years, which will help to attract new uses and house new activities.







2. Also on the right banks to the north and south, processes are under way that must be recentred in the course of Step I.

An initial study suggests that it will be possible to improve their relation with the riverbank to produce key elements in the "necklace" system described above.

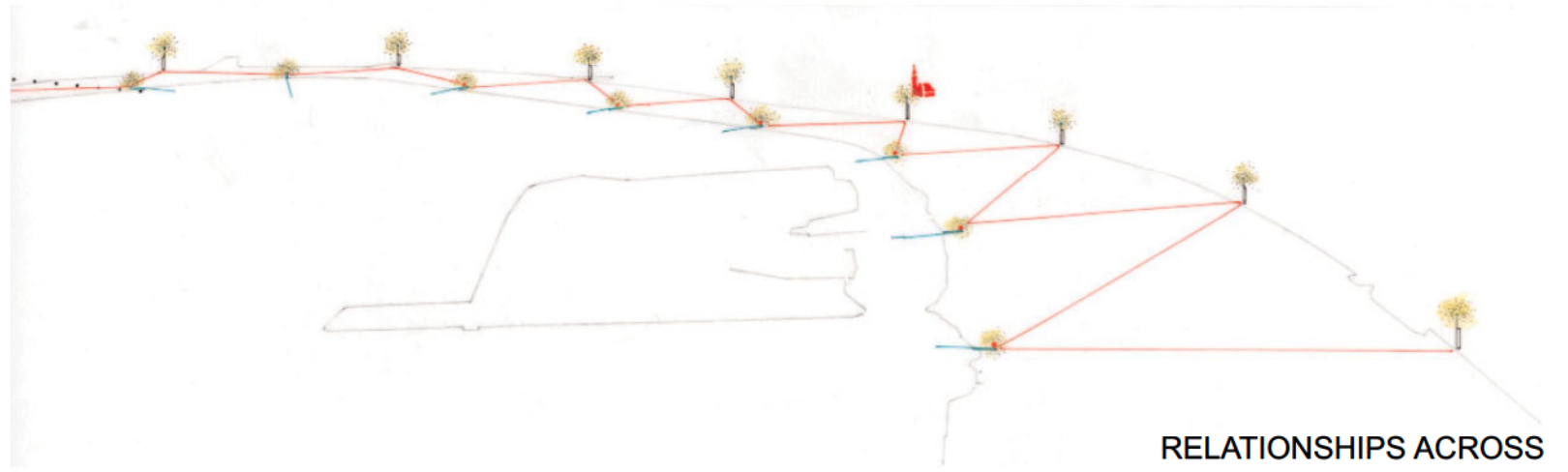
In the case of the Islet, various interventions could become coherent if we give priority to the Scheldt axes.

In the case of the sector to the south, the greater dimension of operations would facilitate the change of the urban topography and the incorporation of elements of relation with the left bank if it is decided to create a new, soft-mobility "urban" bridge between the two banks. This would call for an exact verification of the layout and the idea of shifting the existing tunnel system further the north seems judicious. If this course of action is chosen, it must be an element with a low road-traffic capacity to prevent inducing unnecessary traffic and seek good relations with the new court buildings and the park. It could also comprise a vertebra in the first residential development.

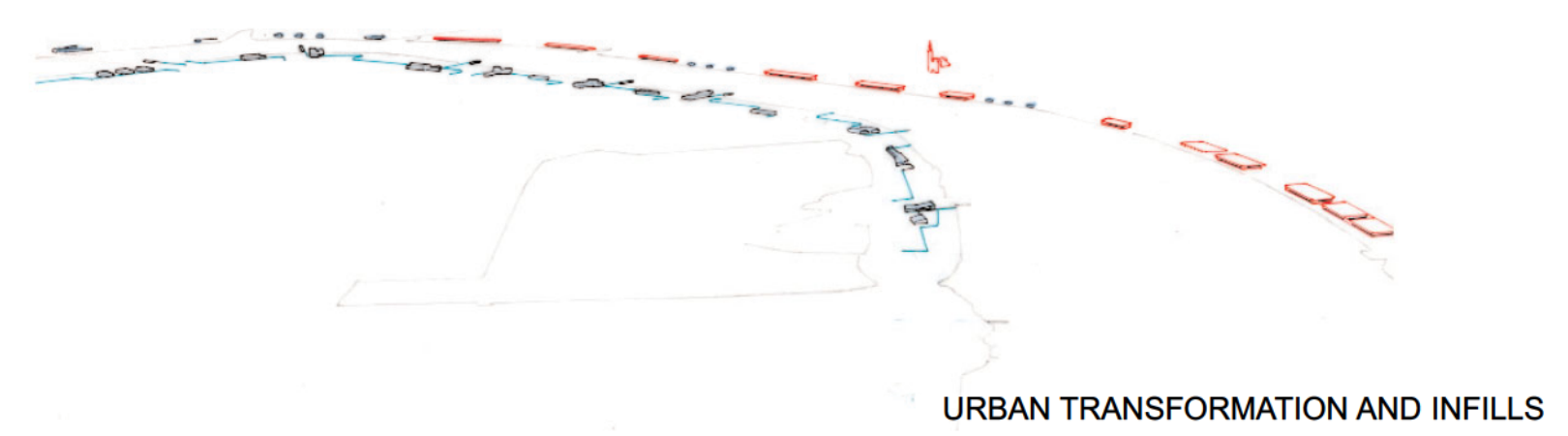
3. In these hypotheses, the left bank could become a large linear river park that strings together existing activities while promoting others to form part of the necklace image. Here its vocation is as a non-built but intensely used space with open-air activities, prioritizing uses related to the moving and/or motionless water, in the latter case in the form of ports, lakes or ponds, etc.

The landscape project within the master plan must prevent the existing street acquiring protagonism in the sector's image and use. In turn, the regeneration of the left bank is responsible for producing a substantial improvement in residential quality with infill operations in the eastern city, with the Scheldt and riverside activities as its constant reference. Here, it can play with the river's two directions, north-south and east-west.

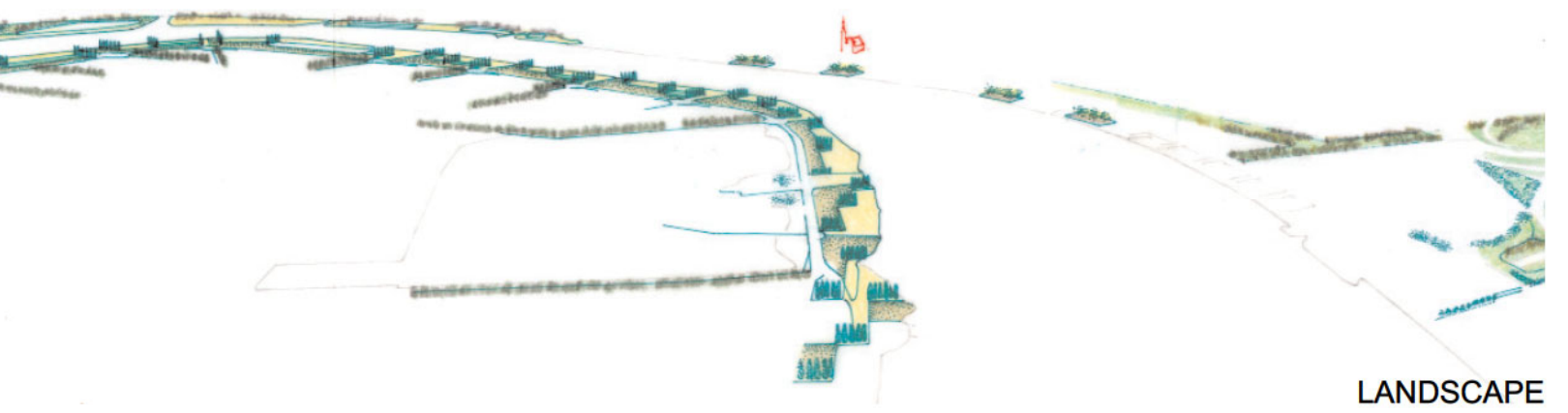




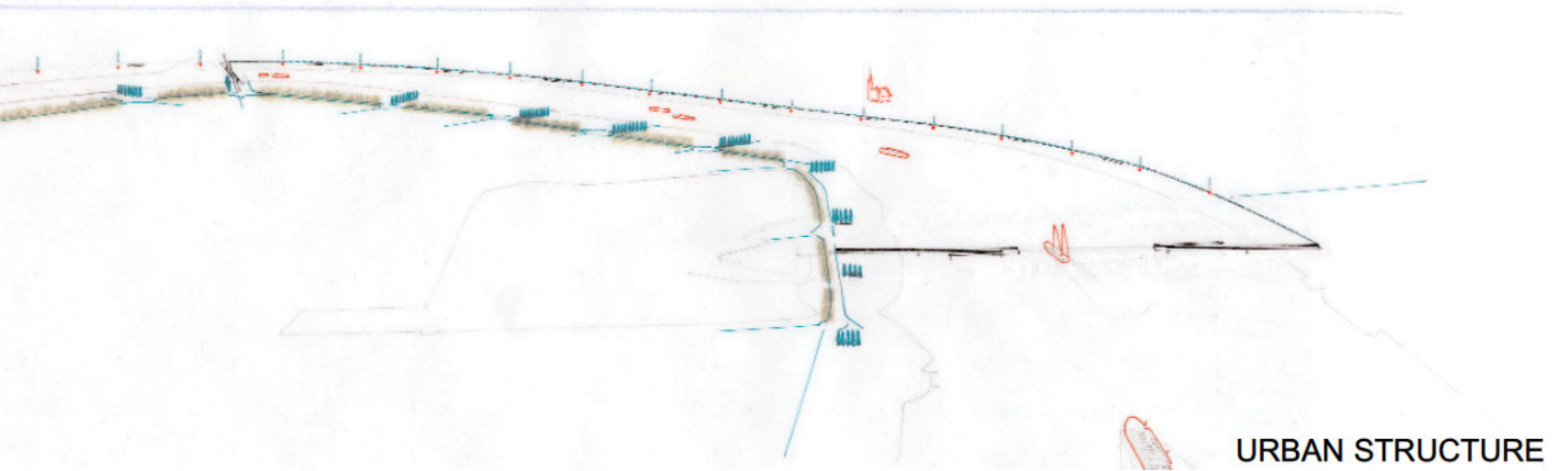
RELATIONSHIPS ACROSS



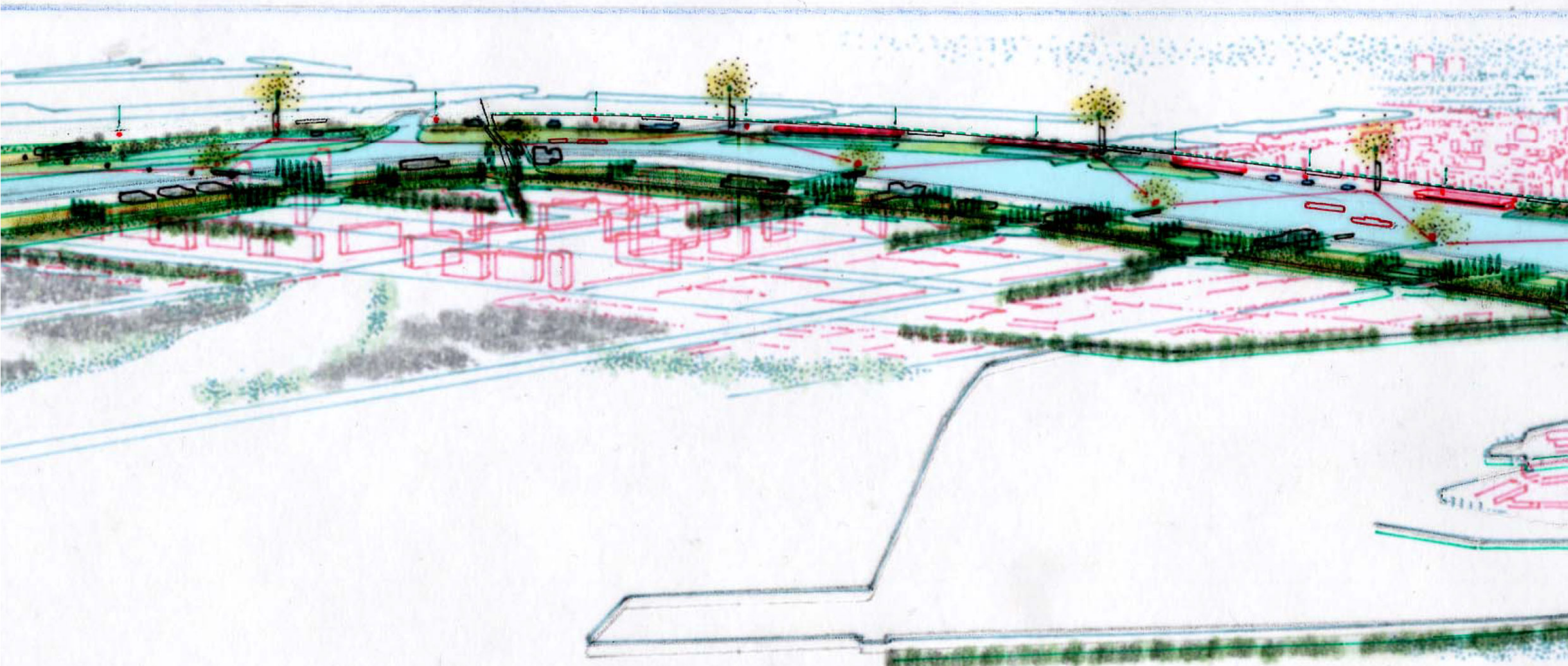
URBAN TRANSFORMATION AND INFILLS



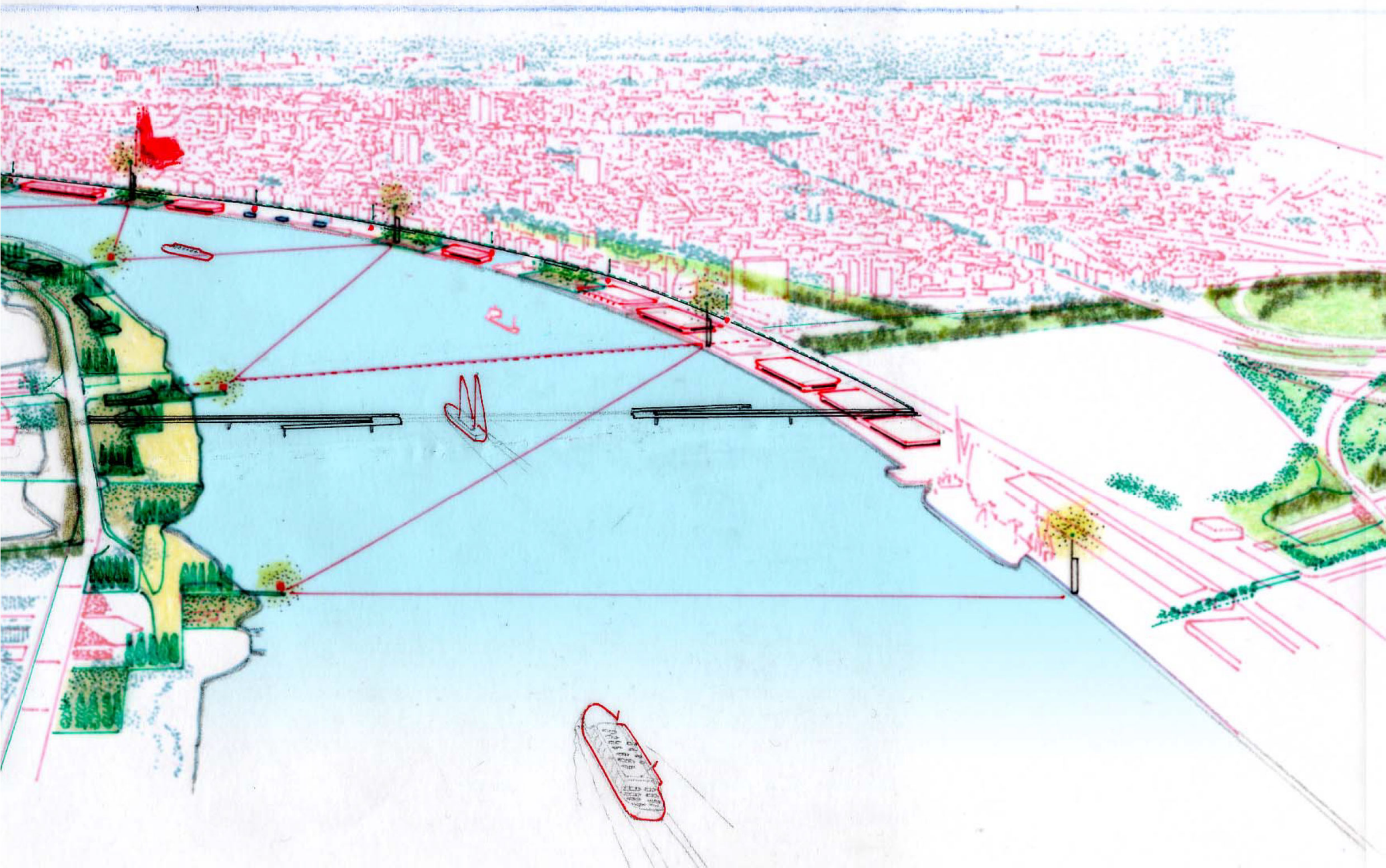
LANDSCAPE



URBAN STRUCTURE

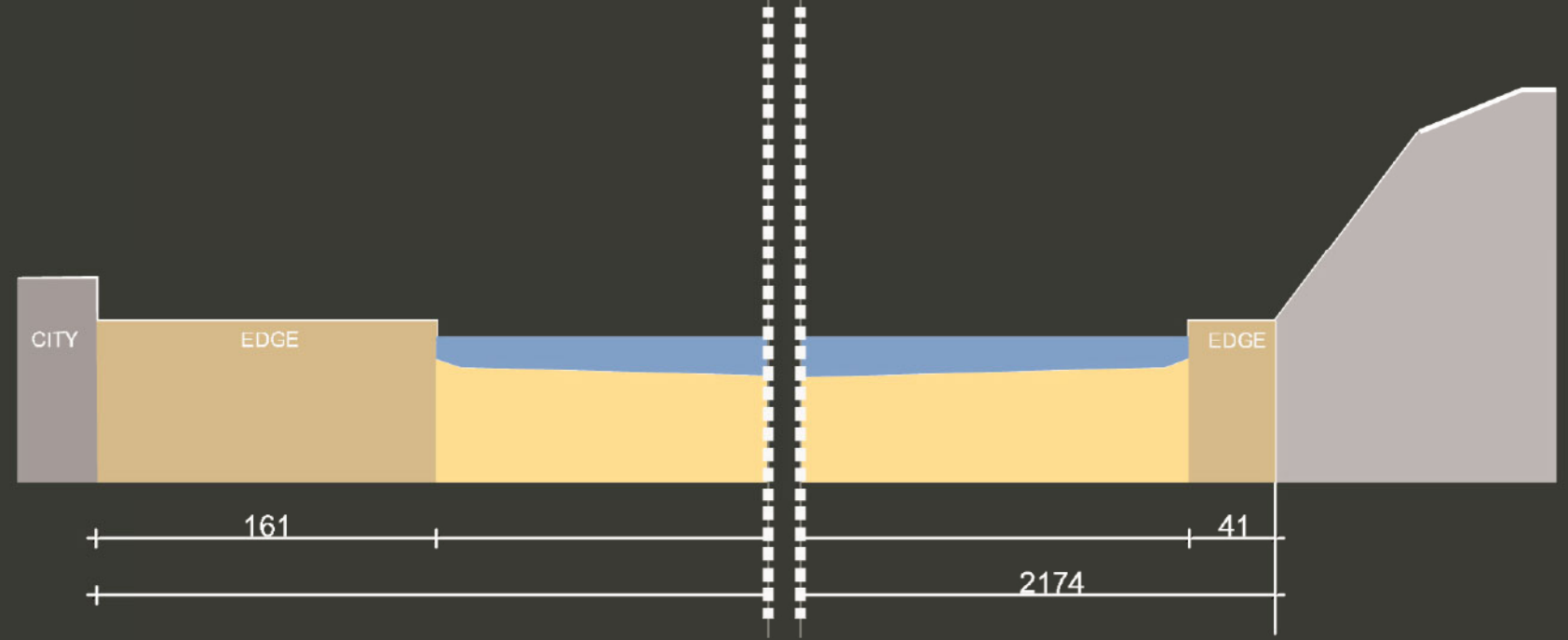


Handwritten text and lines at the bottom right of the page, possibly a legend or title. The text is partially obscured and difficult to read, but appears to include several lines of writing in blue and red ink.

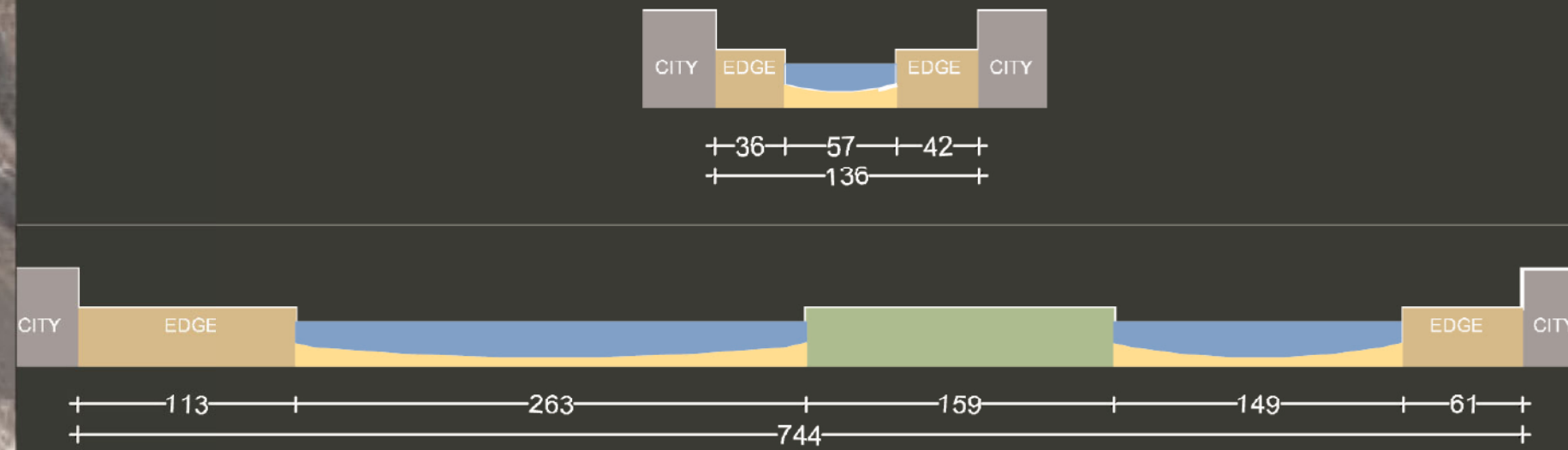




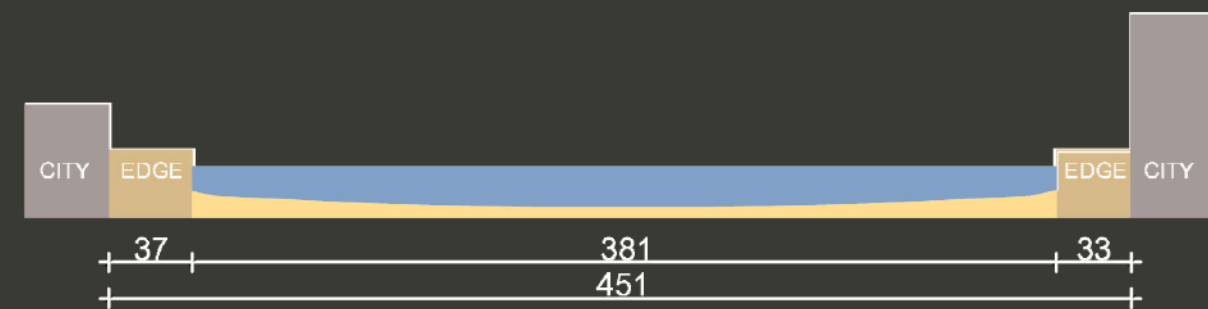
LISBON

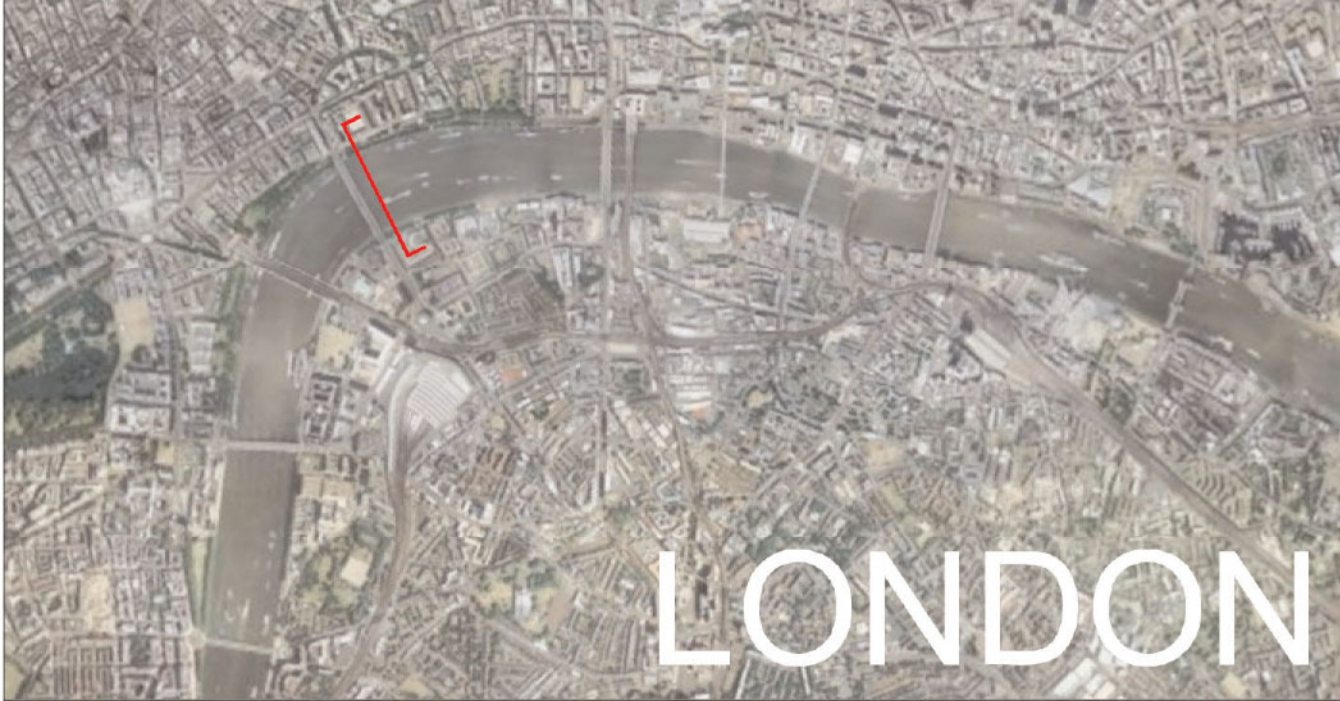


WIEN

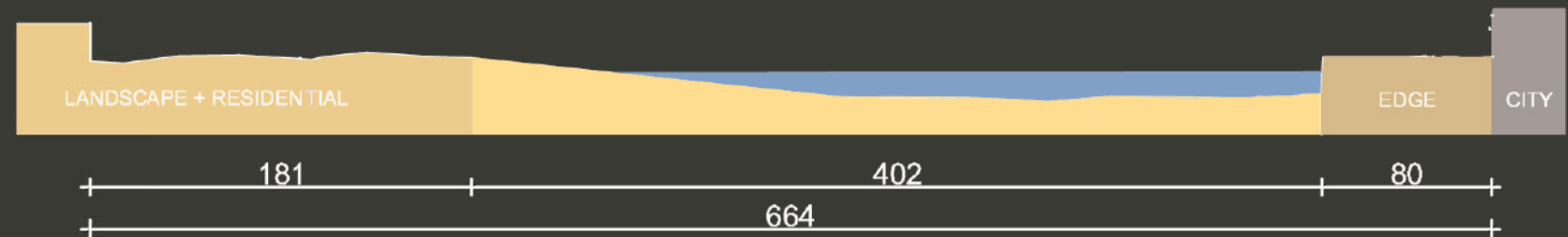
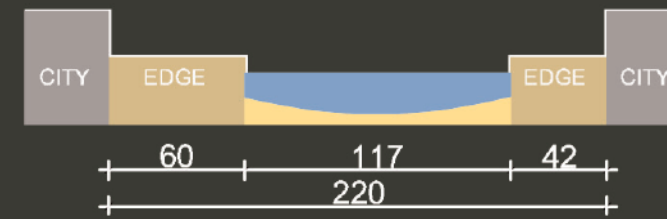
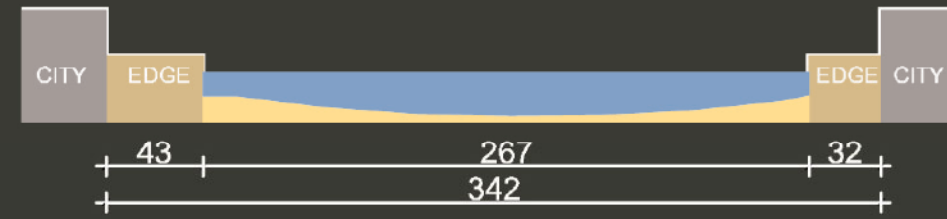


ROTTERDAM





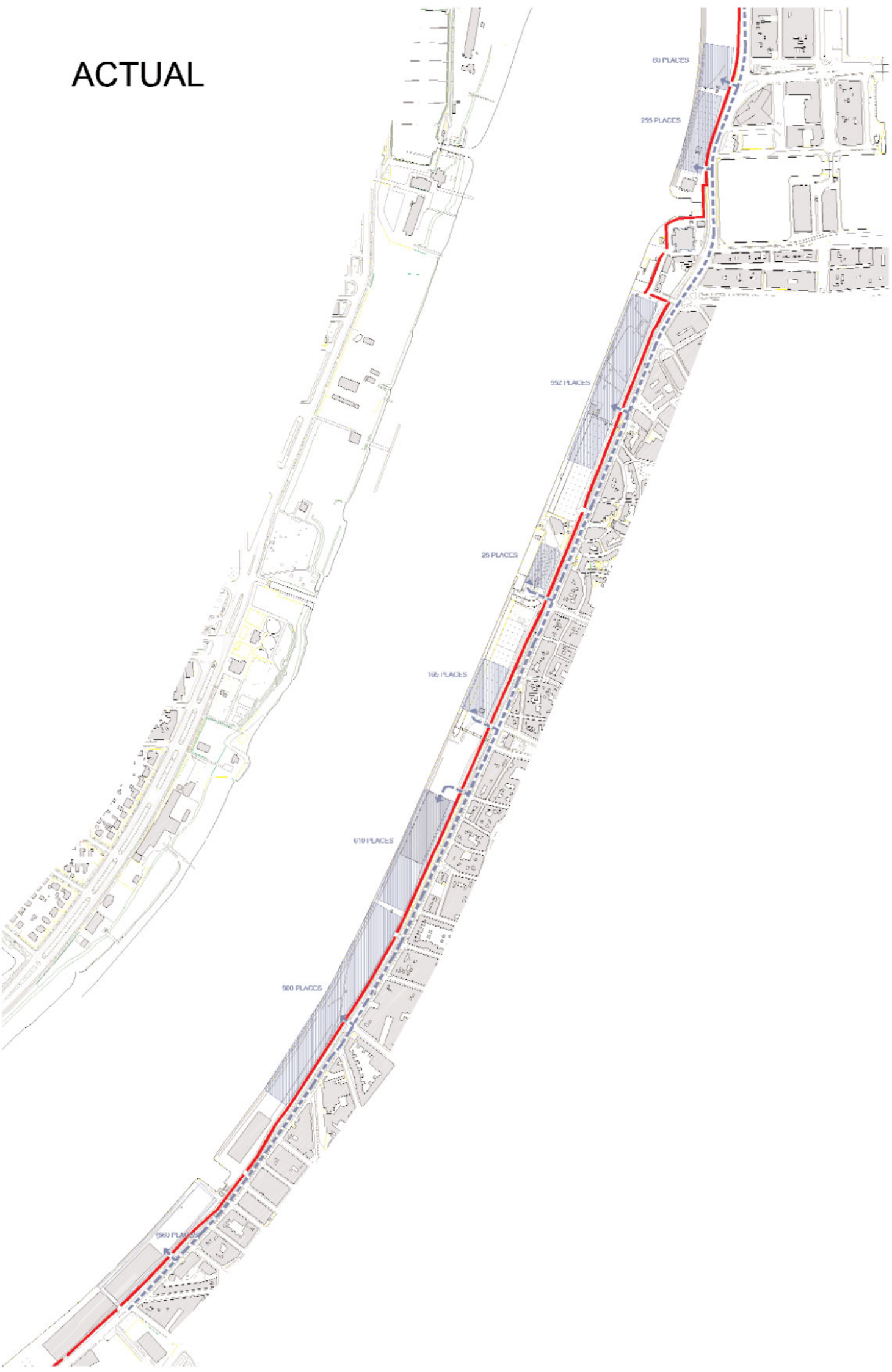
RIVERFRONT REFERENCES AND PRECEDENTS



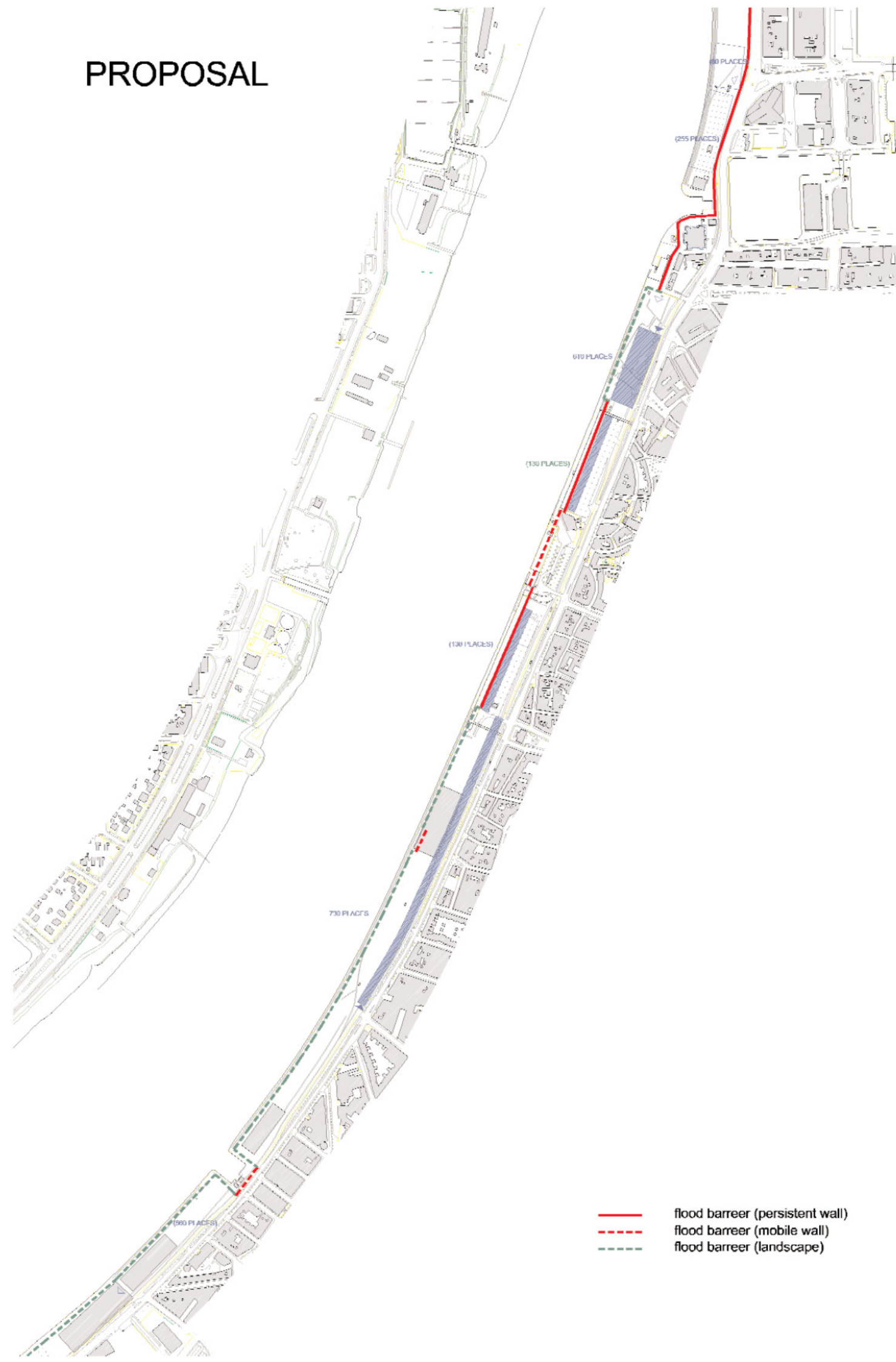




ACTUAL



PROPOSAL



- flood barrier (persistent wall)
- - - flood barrier (mobile wall)
- - - flood barrier (landscape)

070205



B-2. Implementation of a vision for the quays

The master plan must take special pains to find the conceptual and technical urban planning mechanisms to restore the riverbanks to their former civic splendour.

The riverbanks might objectively be said to have a greater capacity today than ever before. One problem may be that the territory is so open that there are countless, perhaps easier alternatives for urban development "beyond" the scope of the river. If, however, the potentialities of the banks are showcased, they offer evident competition to many other alternatives.

The urban project must therefore be clear and exciting to present the place as a site for new uses and developments.

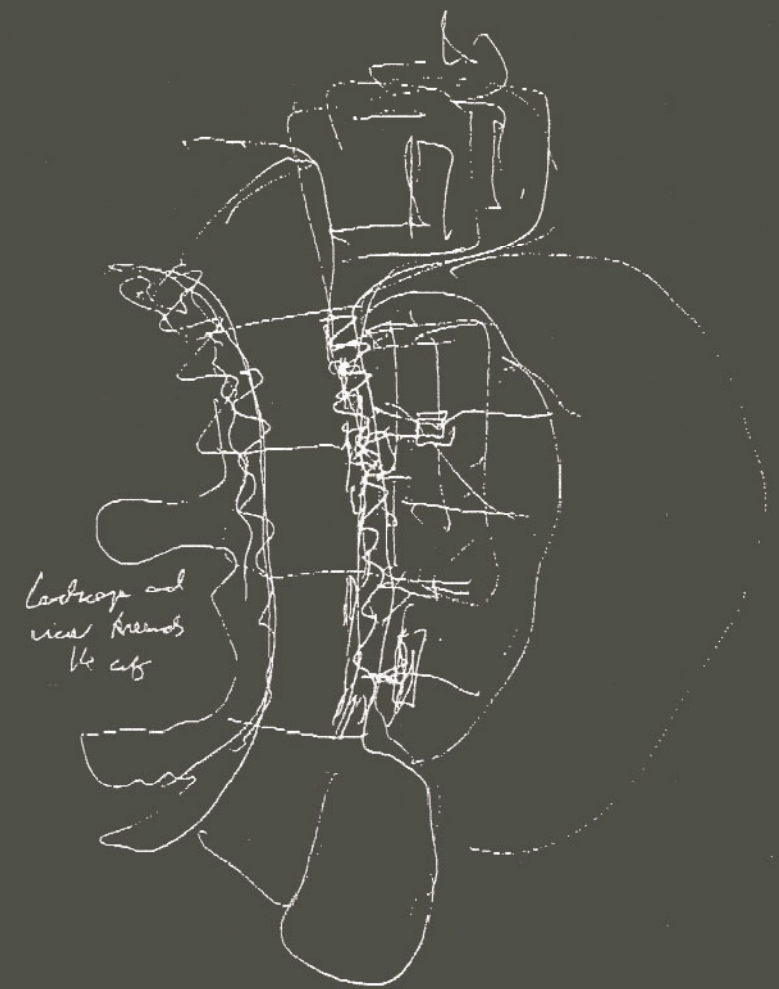
This means that the master plan will need an iconic dimension to help to explain the attributes of these large urban spaces. It will also be necessary to ensure that whatever the vision (or visions) chosen by the master plan, its application can take place in phases and, most importantly, each phase has sufficient leeway to develop its operative viability.

Here, the experience of operative urbanistic programmes implemented in other European cities will provide a source of reflection that helps to formalize specific operational instruments for Antwerp. In this respect, as we have seen, there are few "riverfronts" in Europe with such a potentiality of expectant space and such a wealth of culture and history in which to anchor new projects for the rehabilitation of urban spaces and/or transformation or construction of new built systems.

In this context, Antwerp presents a challenge in that a master plan and a river defence project could be instruments capable of promoting and enhancing a system of interventions of differing nature and scope. In this respect the master plan's capacity as a city "project" could recover its meaning and be an option informed by a high theoretical content.

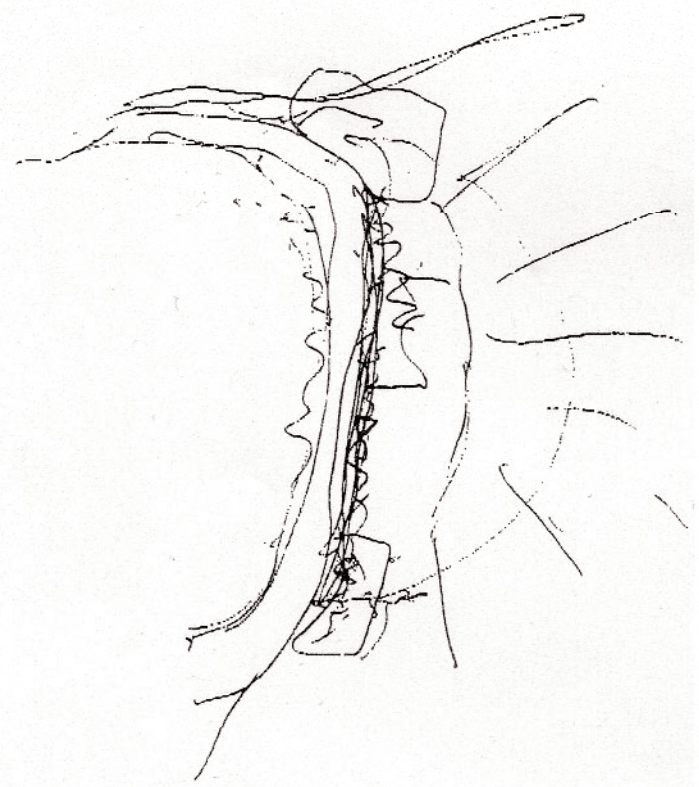
070205

LANDSCAPE ADDS VIEW TOWARDS THE CITY



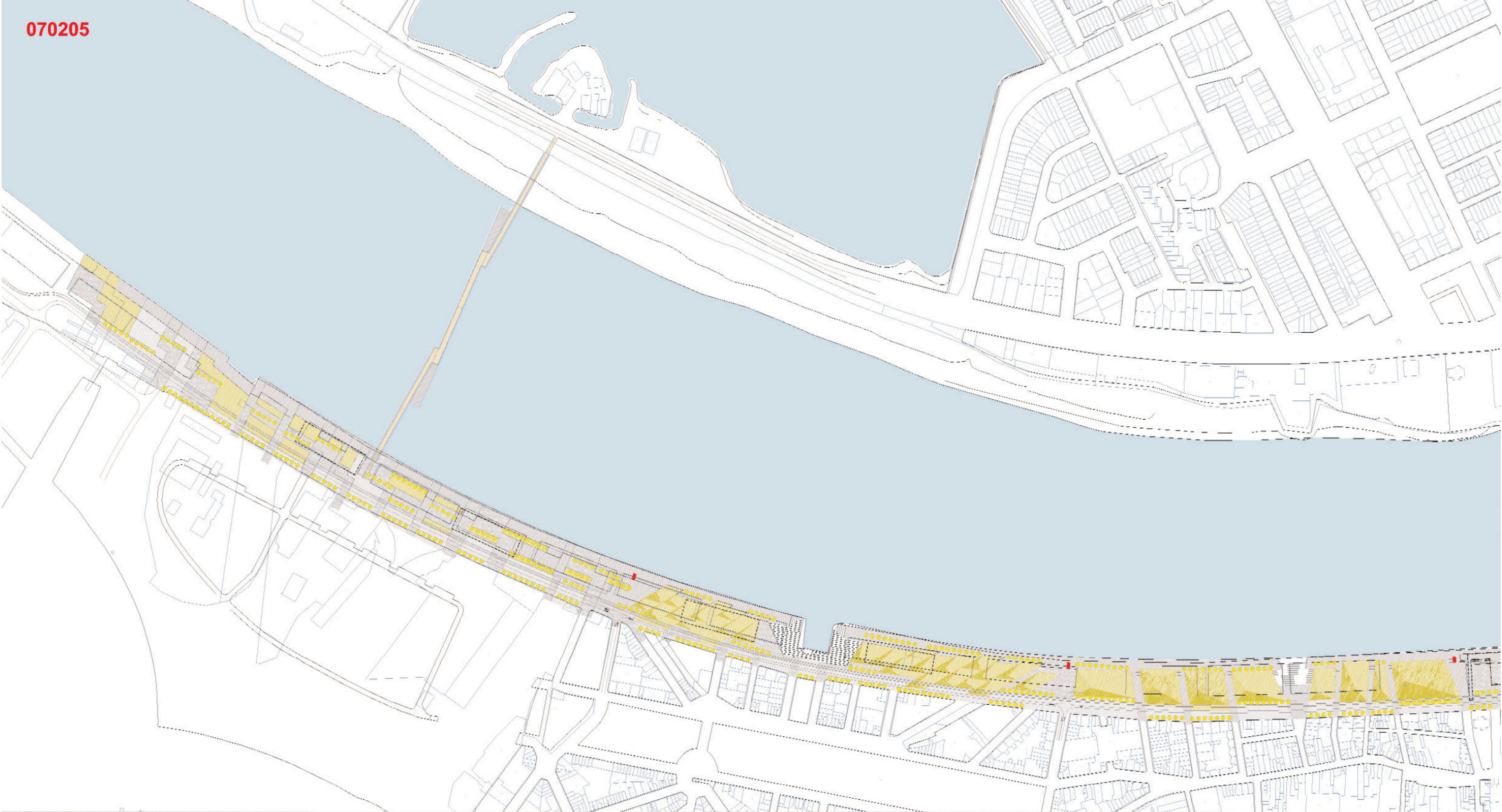
Landscape and
view towards
the city

RIVERFRONT HAS TO RECOVER ITS POWERFUL CIVIC USE

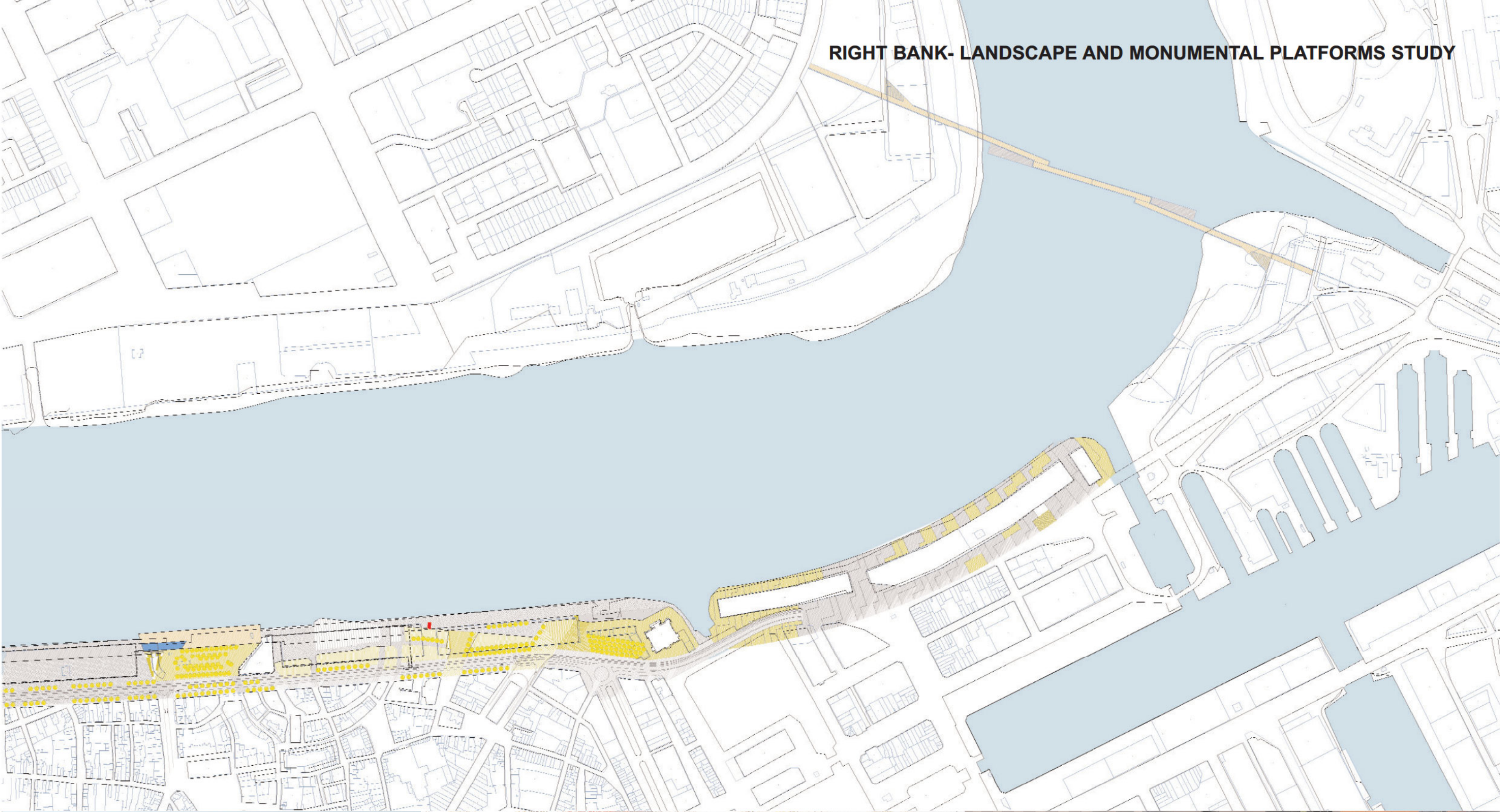


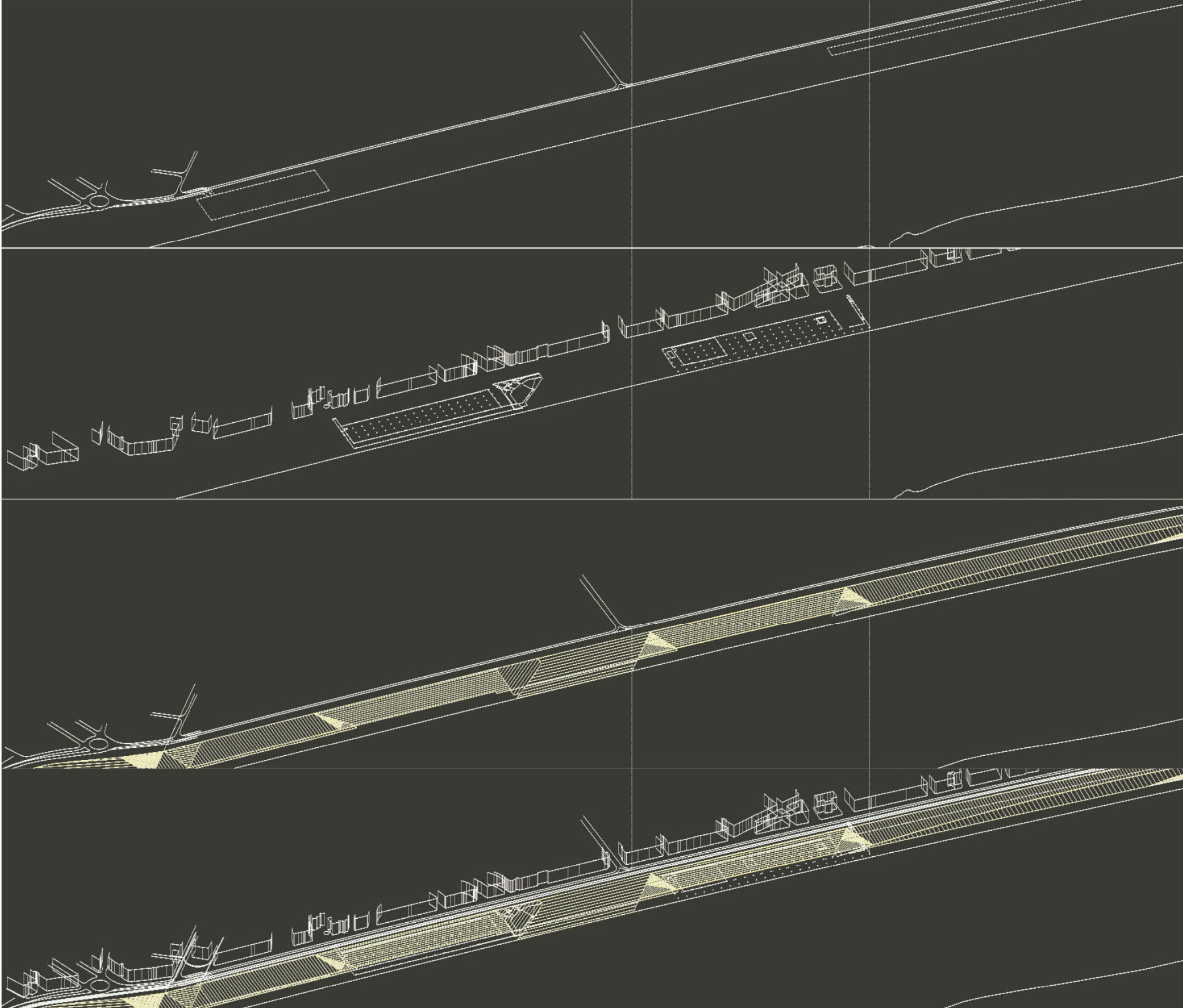
Riverfront has to recover
 its powerful → civic use

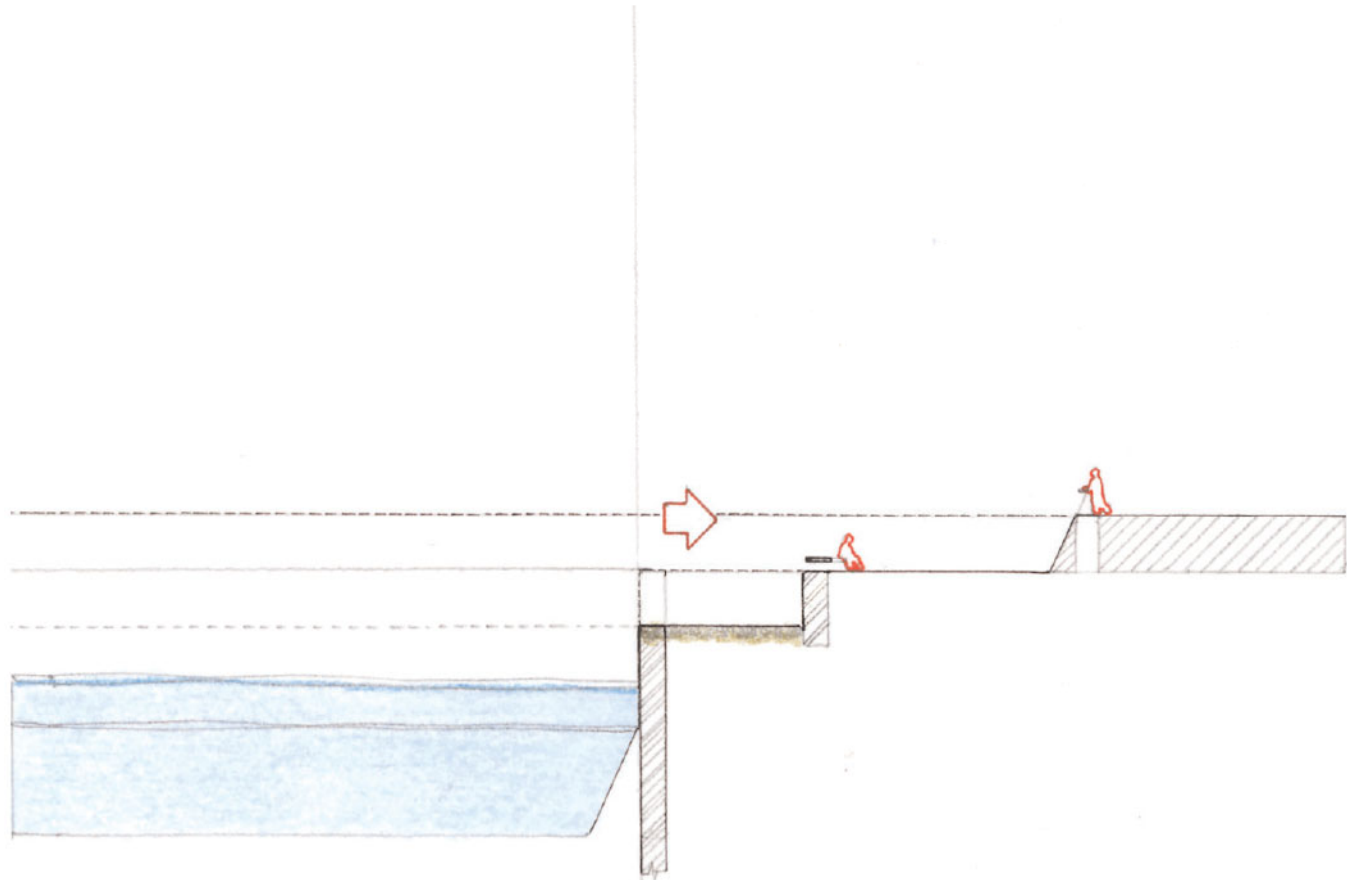
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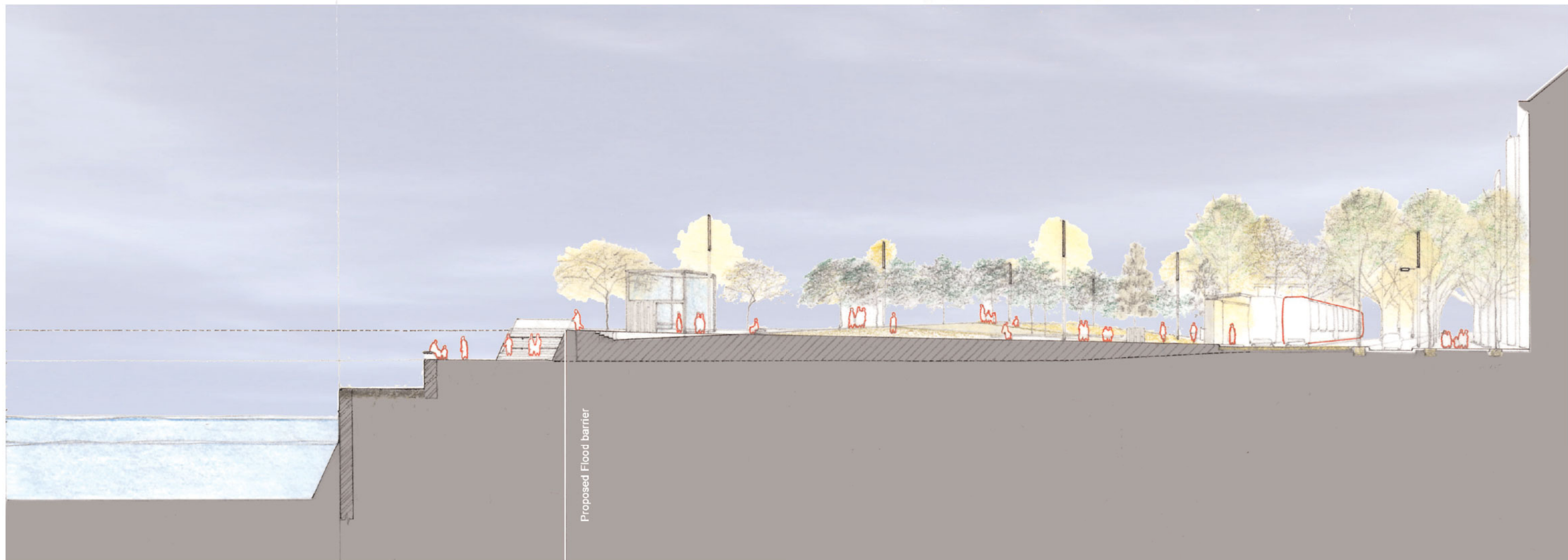
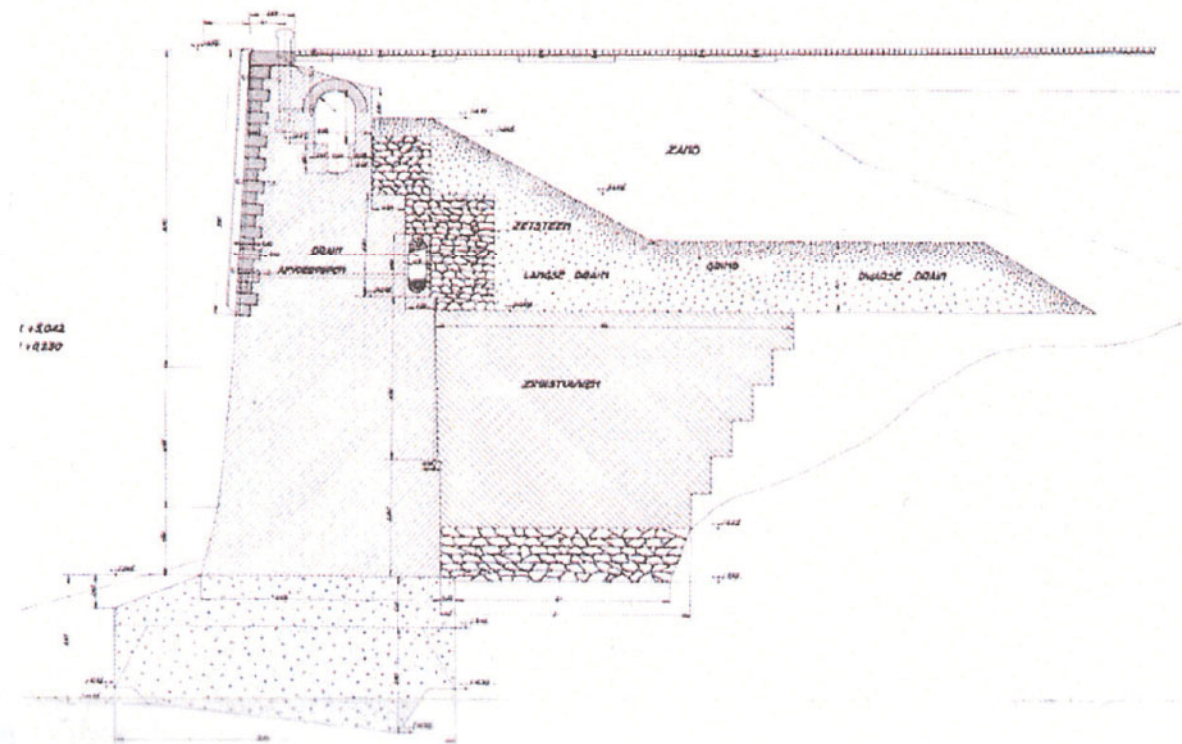
RIGHT BANK- LANDSCAPE AND MONUMENTAL PLATFORMS STUDY

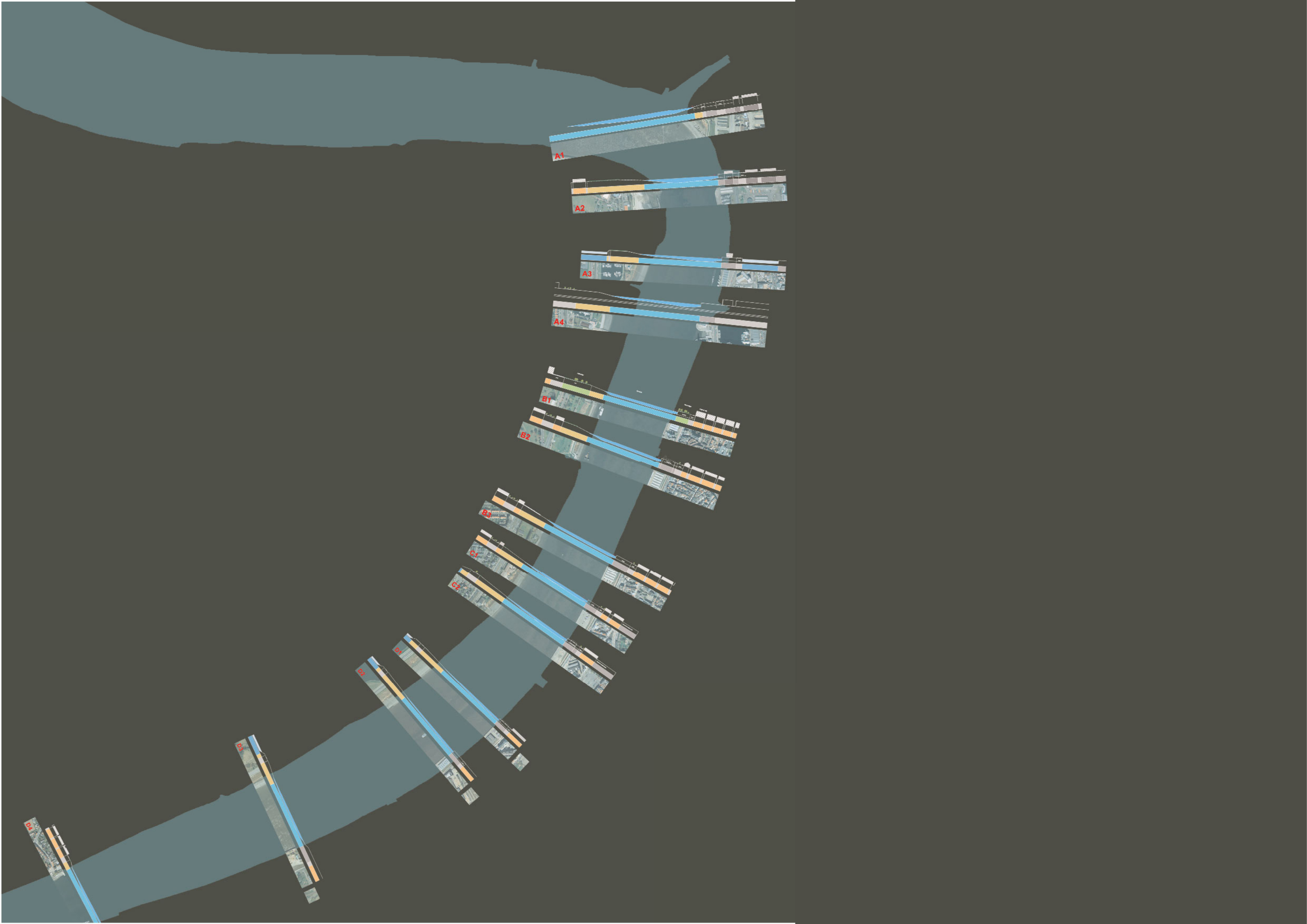






DETAIL BESTAANDE KAAMUUR schaal 1:50



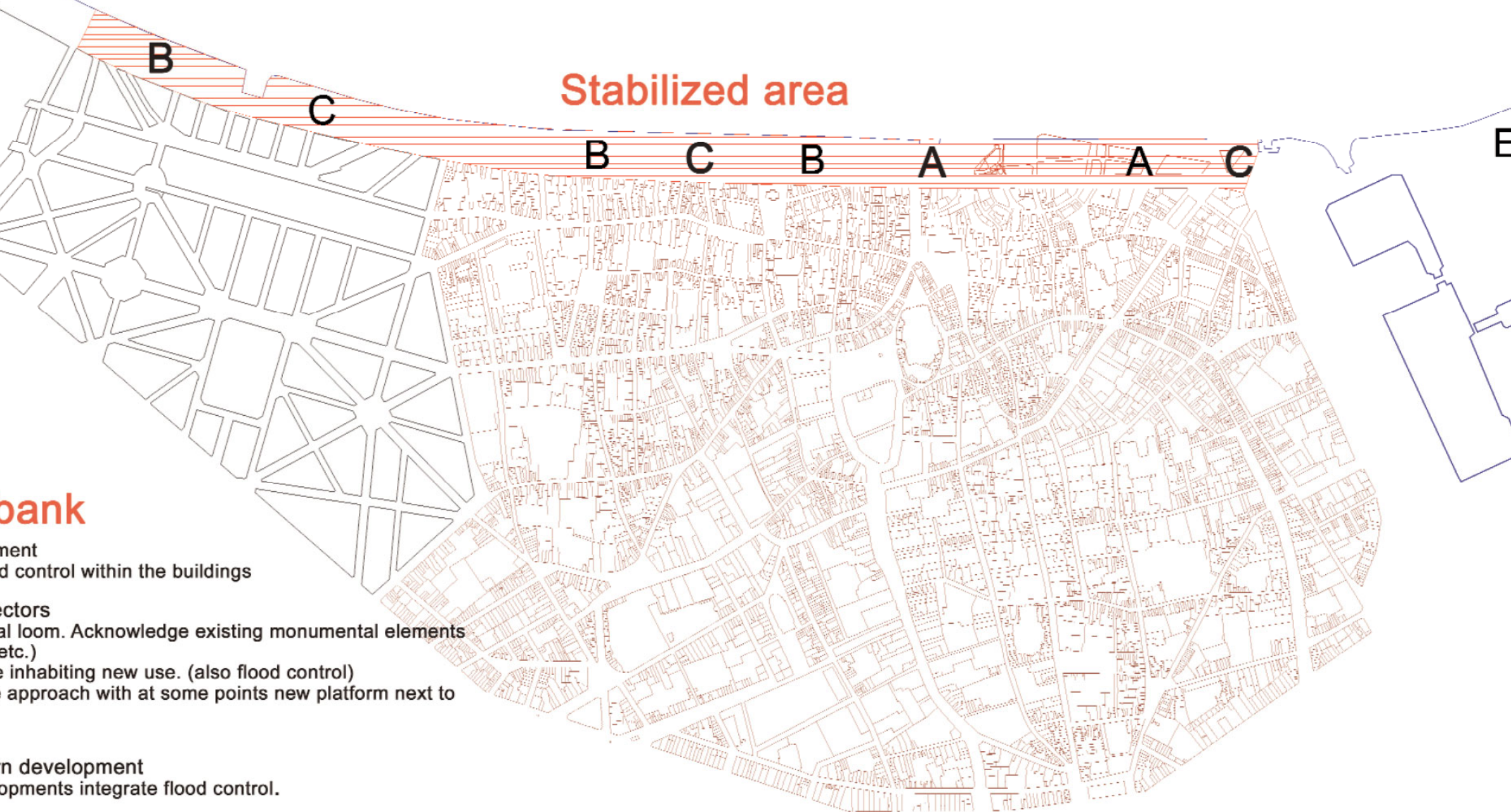


Left Bank

Landscape allows soft uses and flood control.



Stabilized area

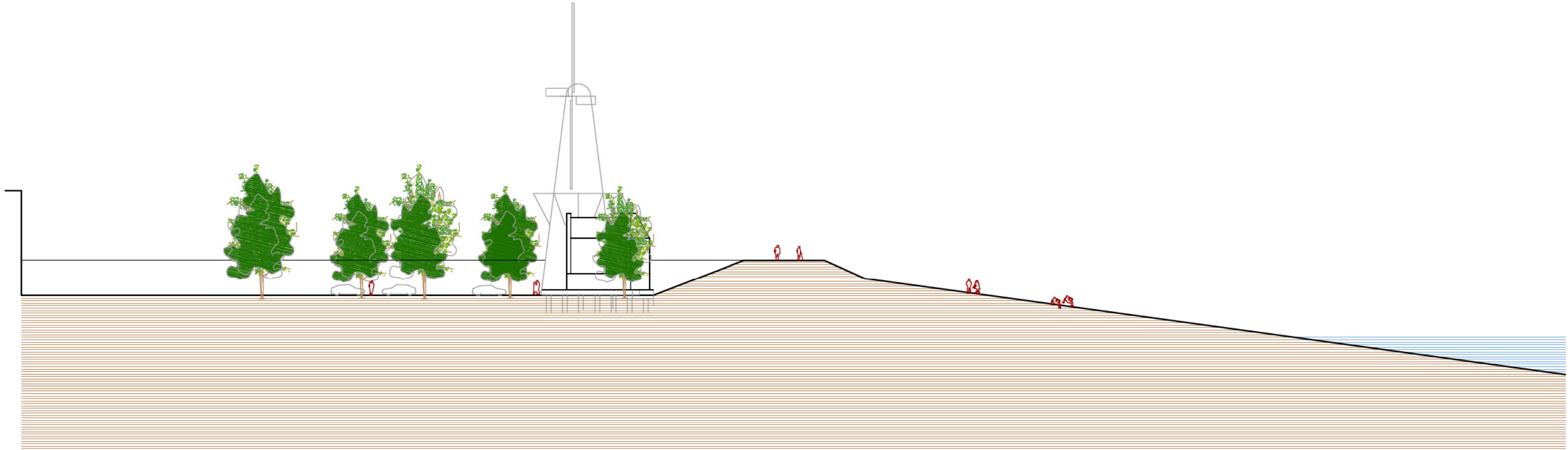


Right bank

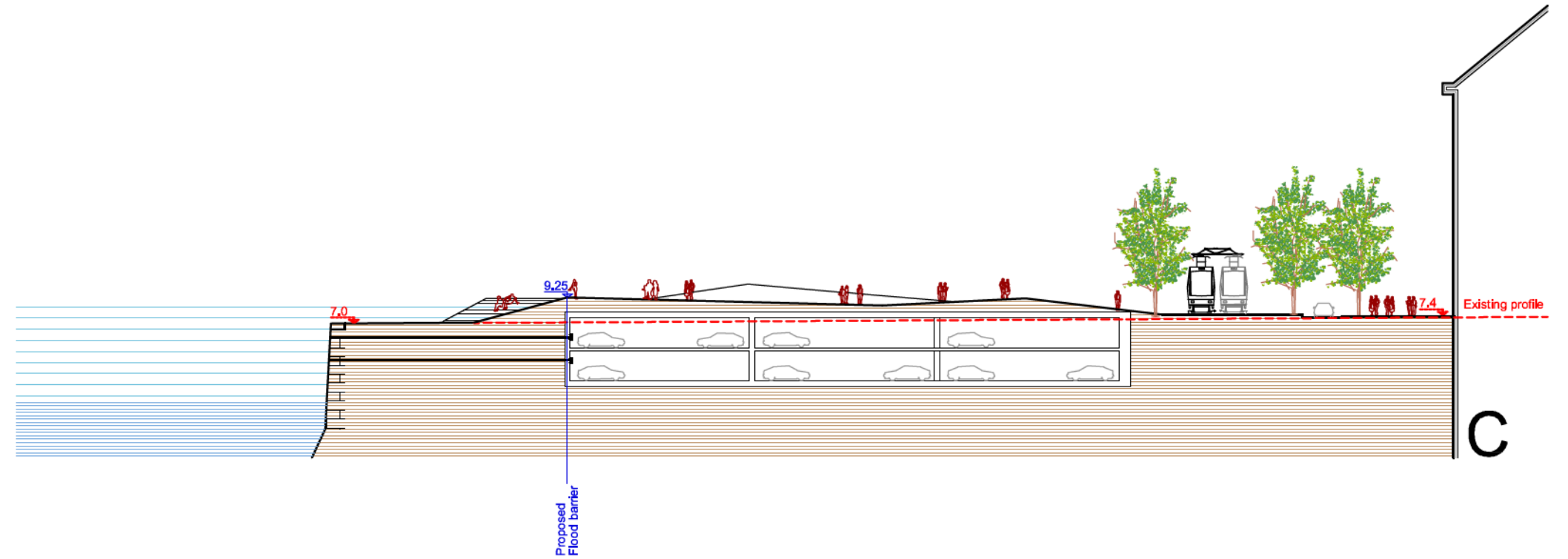
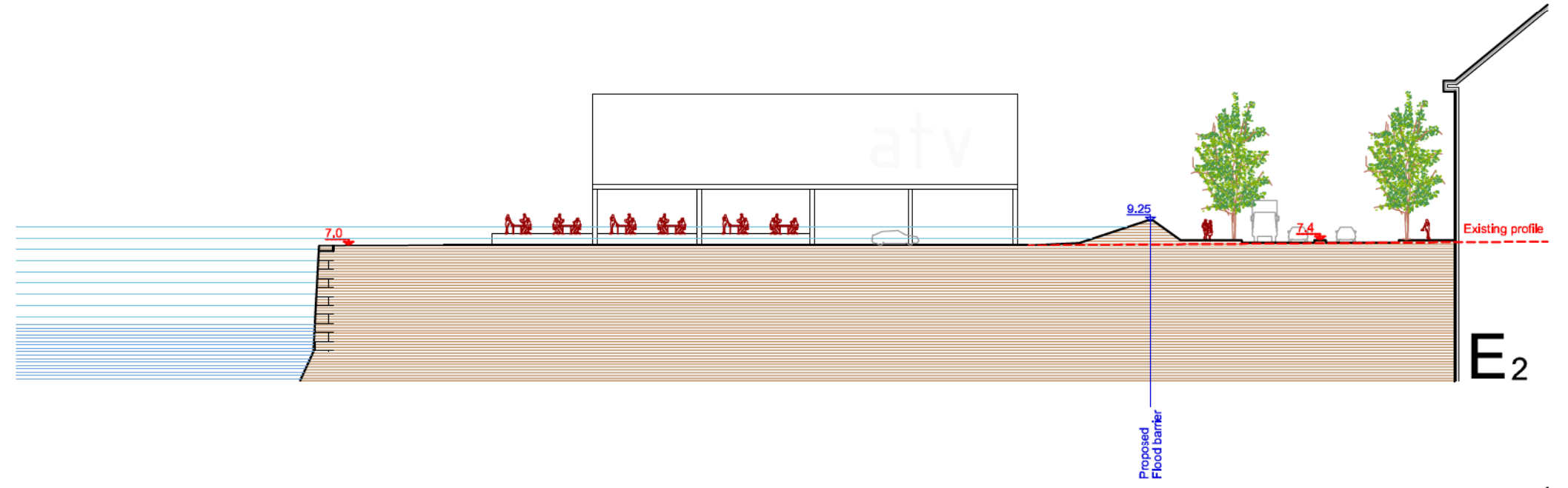
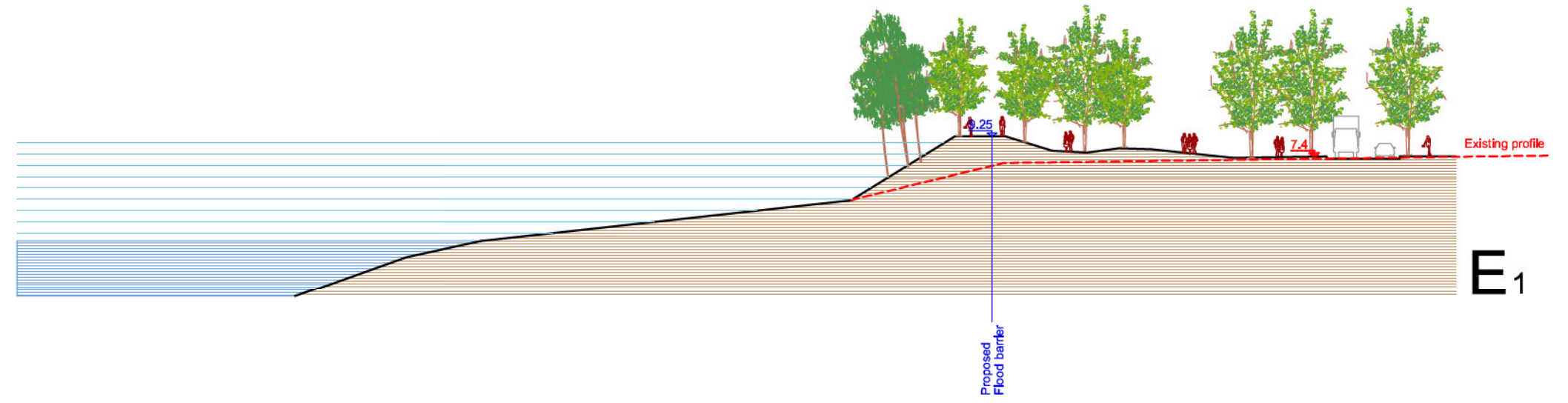
Islet development
 E Mall. Flood control within the buildings

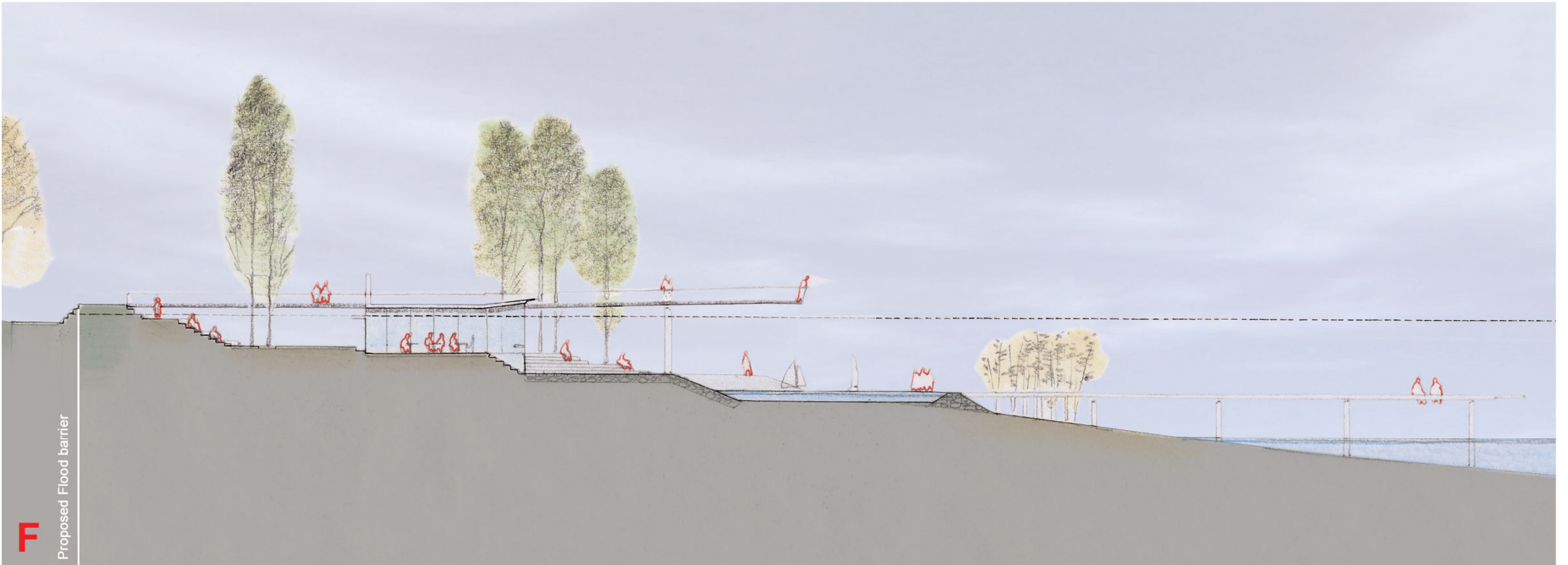
Stabilized sectors
 A Monumental loom. Acknowledge existing monumental elements (+ old trees, etc.)
 B Warehouse inhabiting new use. (also flood control)
 C Landscape approach with at some points new platform next to the water.

New southern development
 D New developments integrate flood control.



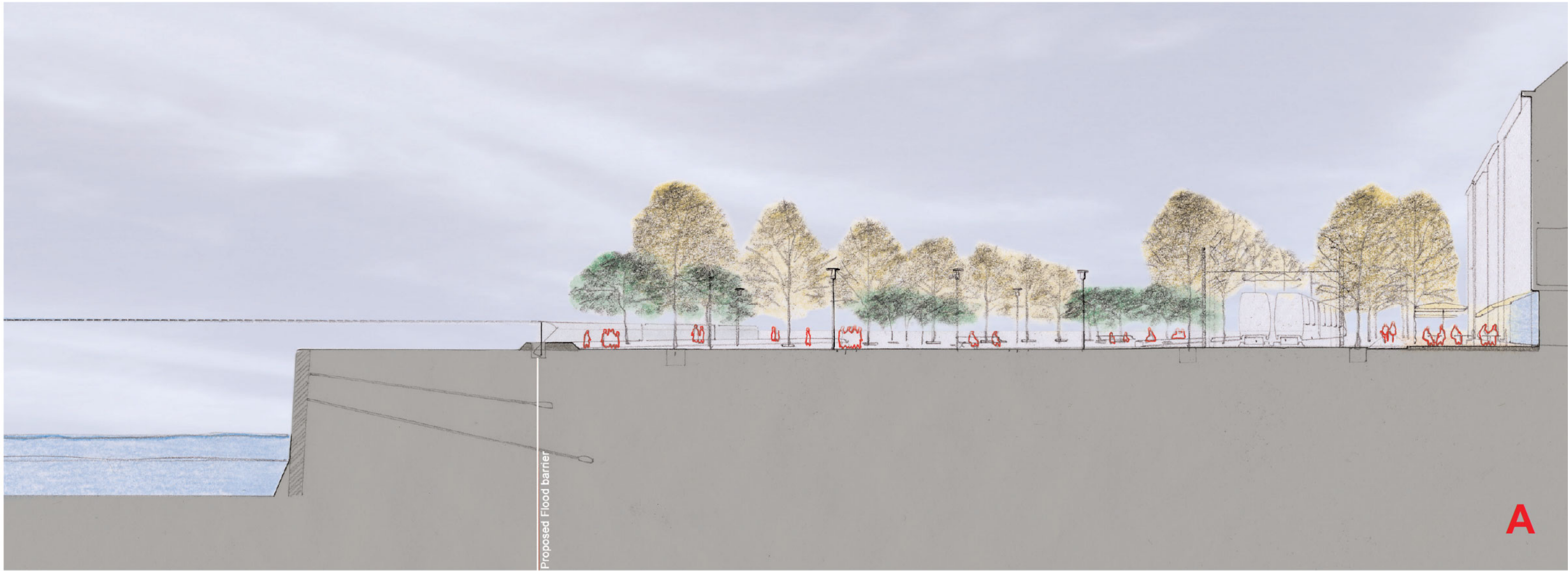
F1



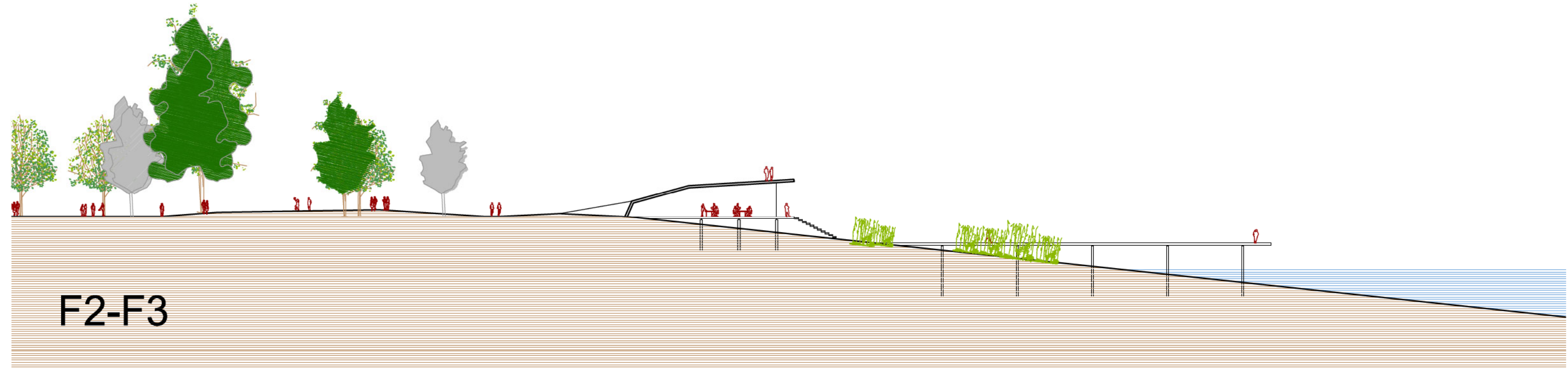


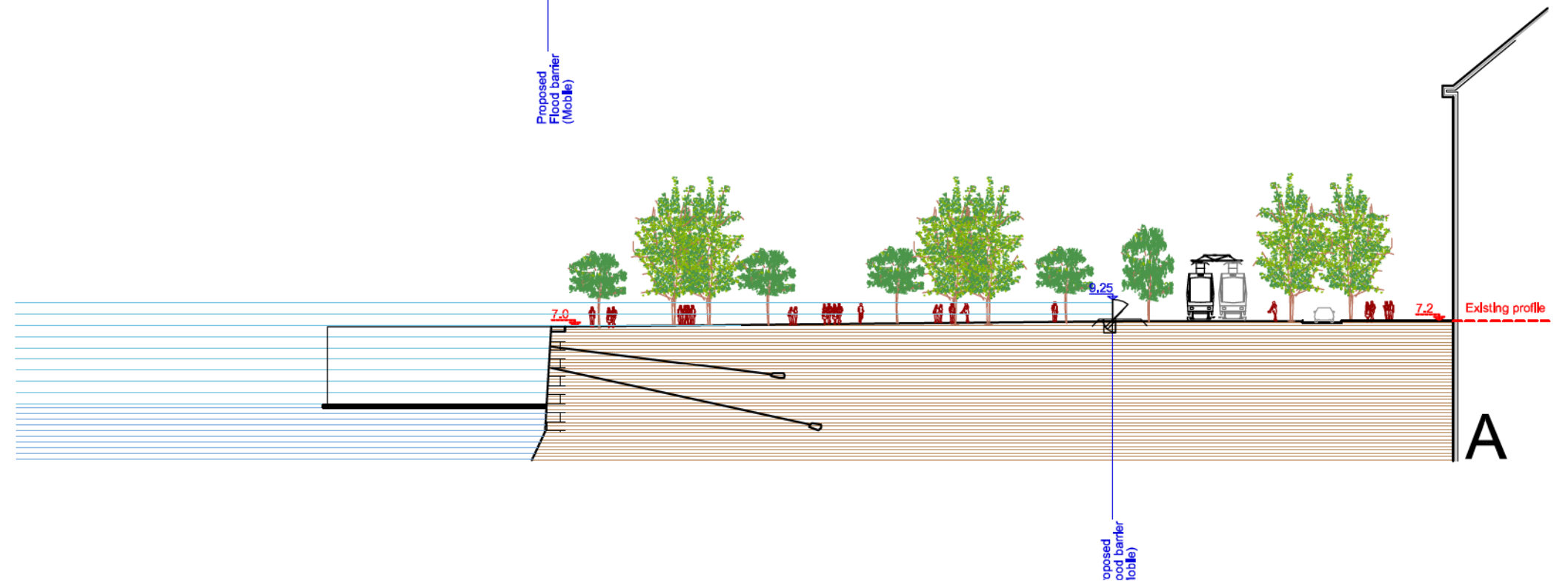
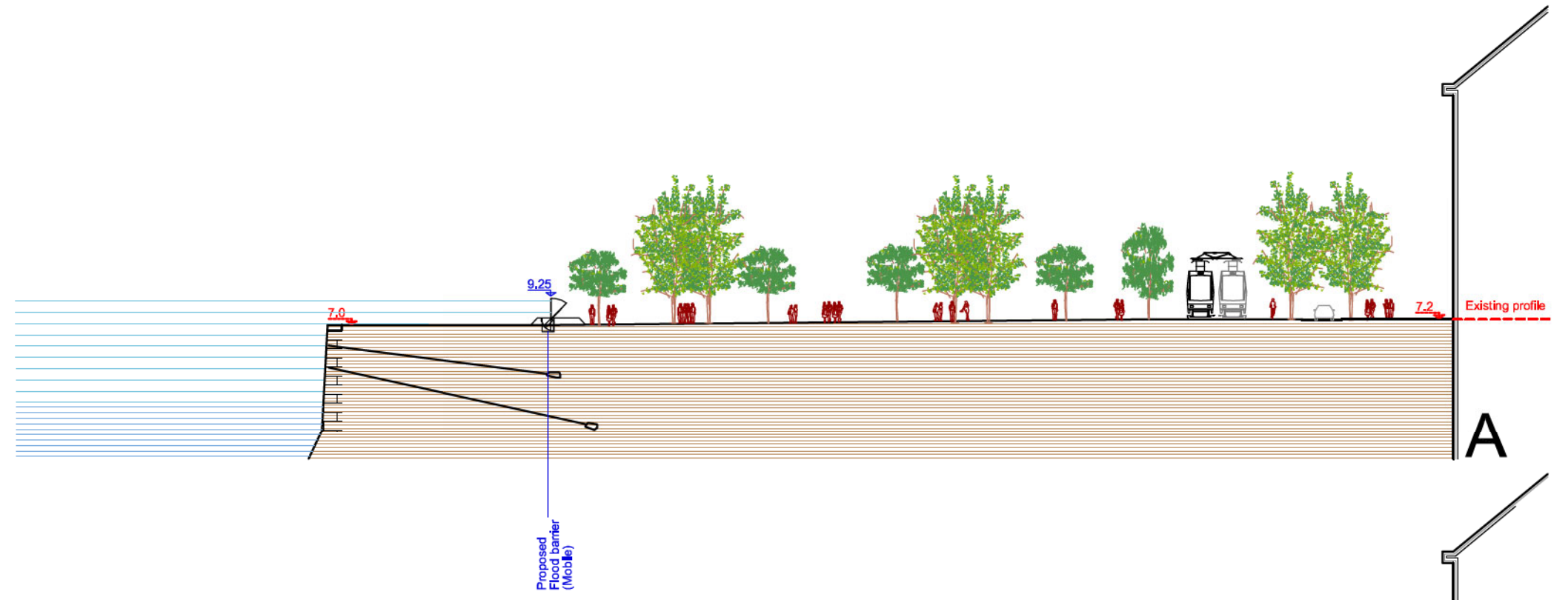
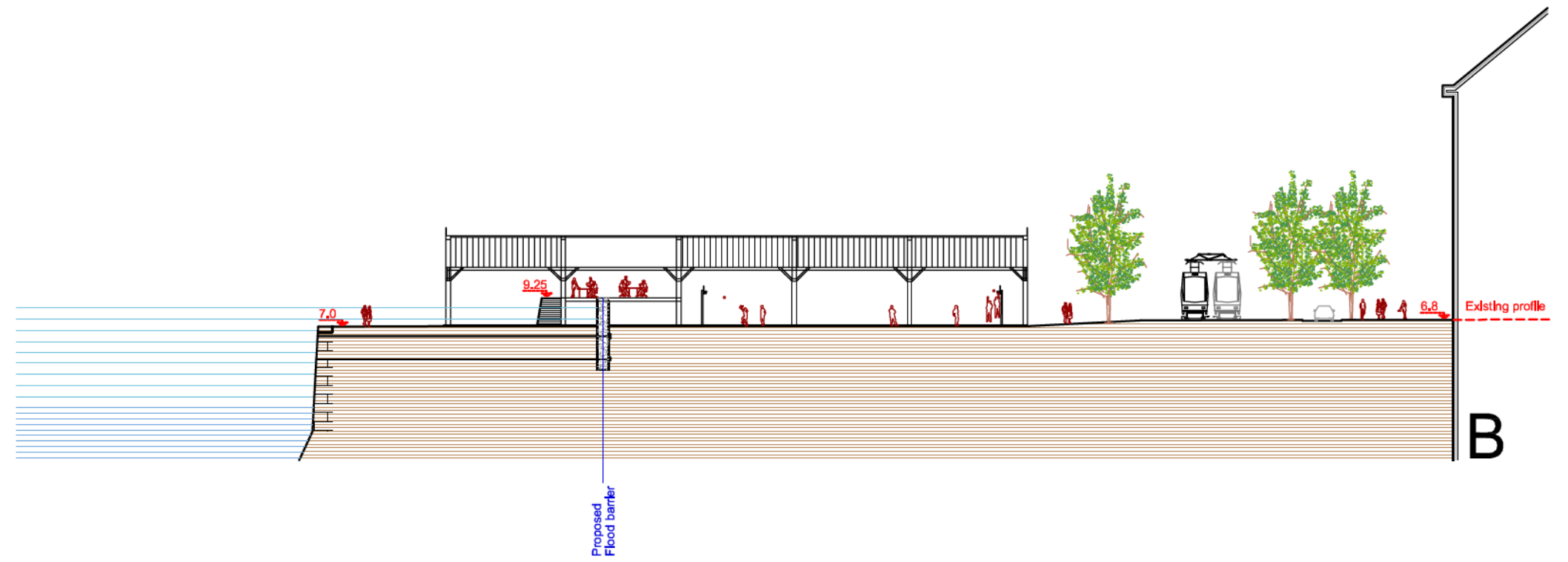
F

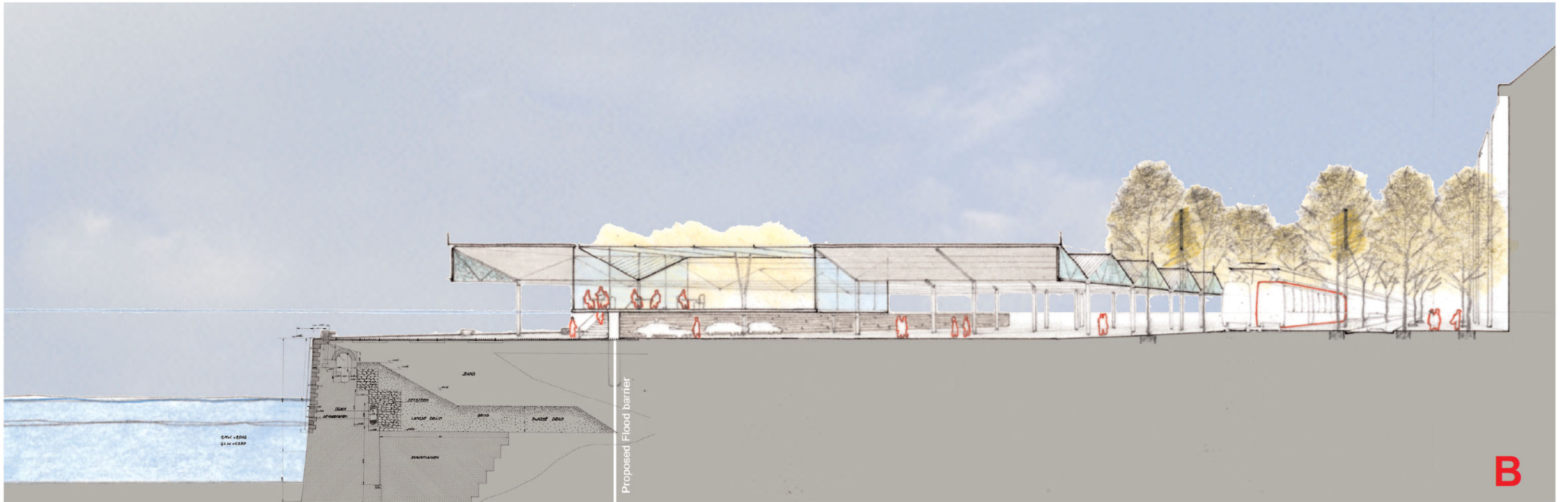
Proposed Flood barrier

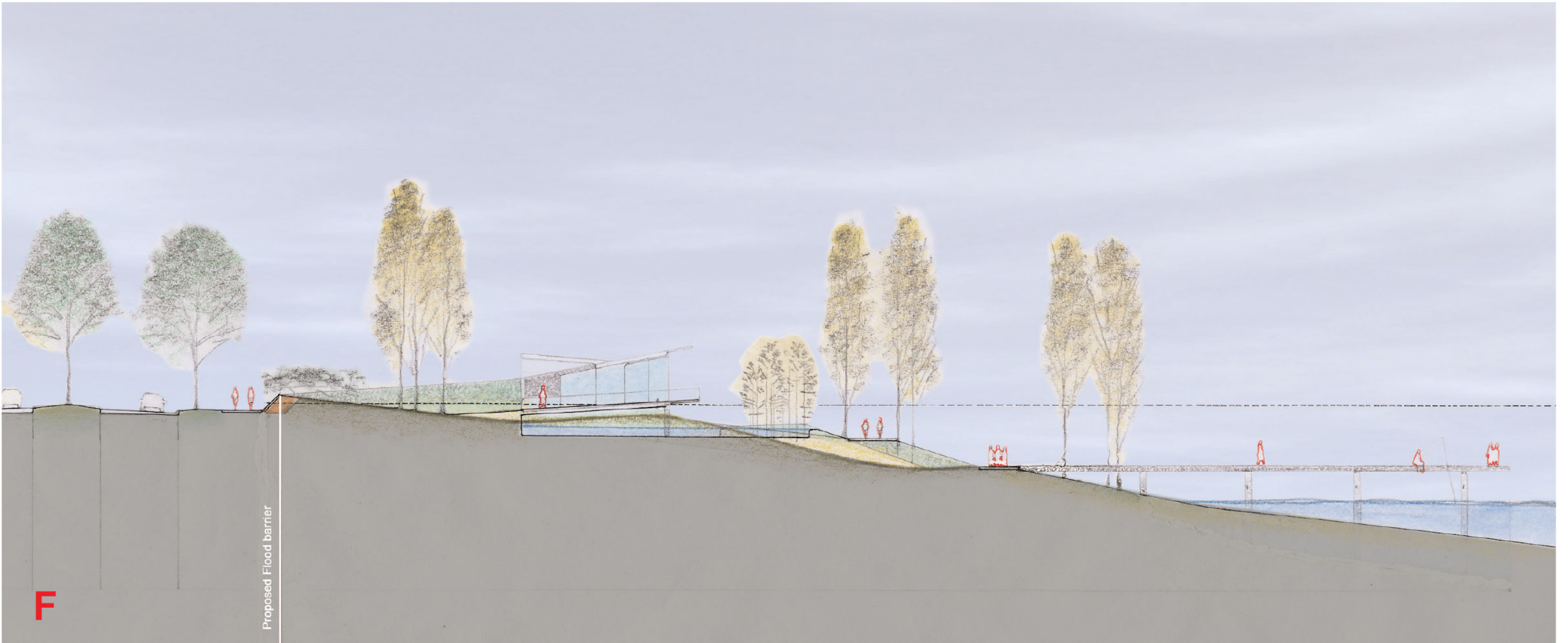


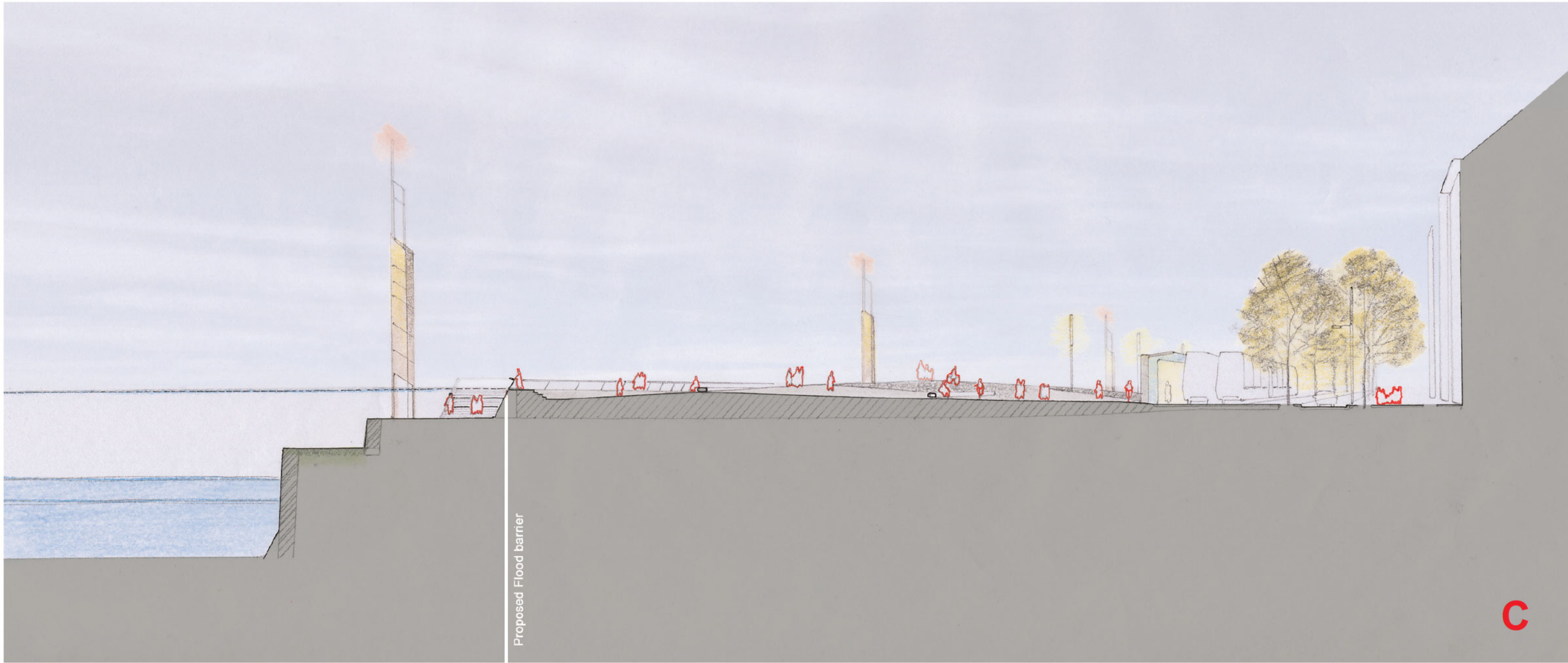








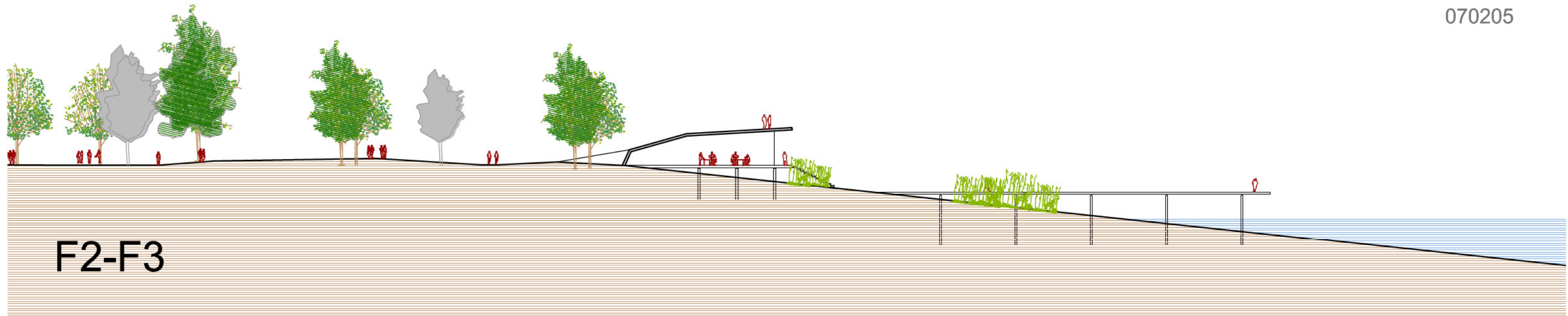




Proposed Flood barrier

C





F2-F3



F4

