

## **Port-city development in Rotterdam: a true love story**

Martin Aarts, Municipality of Rotterdam

Tom Daamen, Delft University of Technology

Menno Huijs, Municipality of Rotterdam

Walter de Vries, Municipality of Rotterdam.

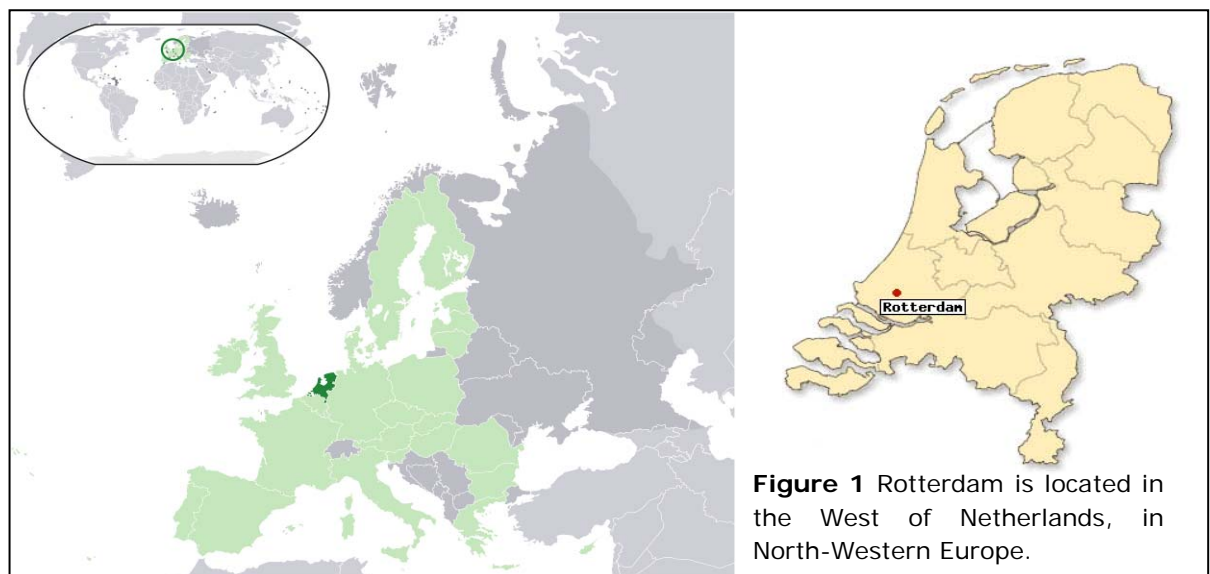
**To many citizens, the port and city of Rotterdam are happily married. Indeed, as the port of Rotterdam became the largest of Europe and even the World, planners and policy makers have done a lot to keep up appearances. Ten years ago, their optimism reached a point of euphoria – one that could only lead to disappointment. A huge port expansion plan in the North Sea was expected to provide the city with ample opportunities to develop a new urban environment inside old port areas inside Rotterdam's highway rim. This new area was called CityPorts – 1,600 hectares of land and water that would transform from a large scale port into an new urban environment.**

**Anno 2012, it has become clear that the transformation plans for CityPorts would never be realized. The city and port of Rotterdam found themselves back to back, and the love for each other seemed to have faded. However, rather than getting frustrated about the situation, those involved worked hard to reach a new development perspective for the CityPorts area: one that provides both the port and the city opportunities to enjoy its diverse qualities.**

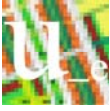
**This article tells the story of how city and the port have found a joint development strategy for Rotterdam's CityPorts during the past decade. The process has resulted in more realistic, so-called 'organic' development plans, which mark the emergence of a new relationship between the port and the city. In essence, Rotterdam has produced new ways of thinking and acting with regard to the areas 'between city and port'. Inside the so-called port city interface, the port authority and the municipality are at the forefront of reinventing the relationships between port and city for the twenty-first century.**

## 1. Introduction

In the past, areas at the geographical boundary of ports and their cities have generally been subject to dereliction and subsequent urban redevelopment. Old port areas are interesting for urban re-use due to their location on the waterfront and their close proximity to the inner city. Moreover, the public attitude towards waterfront zones has changed significantly since the 1960's, and has created a high civic – and thus commercial and political – interest in waterfront locations inside the urban realm. Today, the pressure for the development of alternative uses in areas that are obsolete for or underutilized by their original functions is growing, particularly in parts of the port (still) surrounded by the city. In fact, the great amount of attention for waterfront redevelopment projects around the globe have triggered a 'logic' which features a seemingly unstoppable and on-going port decline or migration, automatically resulting in urban redevelopment opportunities (Daamen, 2007; 2010; Norcliffe et al., 1996). At the same time, a countermovement has been observed, reflected by a renewed interest of port authorities in the older parts of the existing port area.



The Dutch port city of Rotterdam contains the largest port of Europe and the 4<sup>th</sup> largest port of the world. Today, the port authority and the municipality are at the forefront of reinventing the relationships between port and city for the twenty-first century. This article is meant to shed light on the events leading up to the current situation, and how those involved are looking to redevelop Rotterdam's waterfront in ways that will result in



benefits for both the port and the city. This means that we will not attempt to place the situation in Rotterdam within a broader scientific debate on port city development (for this, see Daamen & Vries, 2012). Instead, we will focus on how practitioners are actually dealing with the development of one of the world's largest port cities by focussing on the redevelopment of the Rotterdam CityPorts area. This will deliver interesting insights in (1) the issues related to port city development (2) the ways these issues are being dealt with in Rotterdam (3) and how this contributes to newly emerging relationships between port and city. In order to do so, we will first present some background information about the development of the port city of Rotterdam. In section 3, we will then discuss how the city of Rotterdam has worked to actively redevelop its waterfront areas through time. Finally, in section 4, we draw up some conclusions.

## 2. Port City development in Rotterdam

Over the last five decades, the literature on port cities has continuously and rapidly been growing. Research in this field became paradoxically more intense as many port cities were actually losing their port activities and maritime identity (Ducruet, 2010). As stated earlier, this article will not attempt to provide a full overview of the literature available. Instead, we focus on some of the most important developments that give a proper understanding of how port city relations have changed, and how these changes relate to the redevelopment of waterfronts in Rotterdam. We do so by discussing the evolution of the port of Rotterdam, as changes in the port-city interface have always been preceded by changes in port development. This will give us with a view on the challenges that lie ahead for the port of Rotterdam, and show us how its relations with the city have changed. This will be taken as a point of departure for the projects discussed in the following sections.

### 2.1 Rotterdam Port Development

In the fourteenth century, Rotterdam was a small town on the river Rotte, and was home to river fishing, ship building and a little bit of trade. Over time, the city developed into a true trading port. The opening of the *Nieuwe Waterweg* canal in 1872 signalled the start of Rotterdam's huge growth. Subsequent investments in deep waterways, like the *Caland* canal and the *Hartel* canal fuelled this growth. The main competitive advantage of the port of Rotterdam was the direct connection to the sea without locks and without bridges, from which it still benefits today. These free and deep waterways have established the preconditions for an efficient and very accessible port, which is evidenced by its unique ability to welcome the world's largest vessels. While Rotterdam's geographical location lies at the root of its success, it is sophisticated Dutch water engineering that has

ensured its position as one of the main gateways to Europe. The port of Rotterdam is accessed from the North Sea, and is part of the so-called Hamburg-Le Havre (HLH) range (see figure 2).



**Figure 2** An overview of Europe's most important ports







With a total maritime throughput in 2010 of 1.22 billion tons (i.e. 30.3% of total European port throughput) and a container throughput of 37.8 million TEU (i.e. 43.9% of total European container port volumes) handled along a shoreline of merely 500 nautical miles, the Le Havre-Hamburg range ranks among the busiest port regions in the world and is by far the most important port region in Europe. Rotterdam is the largest port within the HLH region. Total cargo throughput in the port of Rotterdam reached 430 million tons in 2010. In throughput terms Rotterdam is by far the largest port in Europe followed by Antwerp (178 million tons), Hamburg (121), Amsterdam (89) and Marseille (86). The market share of Rotterdam in the HLH range gradually fell from 40% in 1990 to 32.5% in 2006, with a slow recovery during the crisis years to 35.1% in 2010. Anno 2011 the port of Rotterdam is the home port for one of the main oil and chemical centres in the world, and a major centre for the storage of all kinds of liquid bulk boasting the largest cluster of tank storage facilities in Europe. In addition, Rotterdam is the main container hub in Europe, and also the largest dry bulk port in Europe with a total volume of some 85 million tons, i.e. a share of 33.1% in the HLH range and 9.2% in the

European port system. In short, the port of Rotterdam is – both in terms of cargo volumes and petrochemical industries – one of the most important locations in the world.

Two main developments have slowly changed the character of the relationships between Rotterdam's port and city. The first is the geographical migration of the port away from the city, and the second is the process of port regionalization.

### *The port moves away from the city*

The evolution of the port of Rotterdam is, like many other ports, well captured by the models of port researcher Brian Stewart Hoyle. One of these models is depicted below, in figure 3.

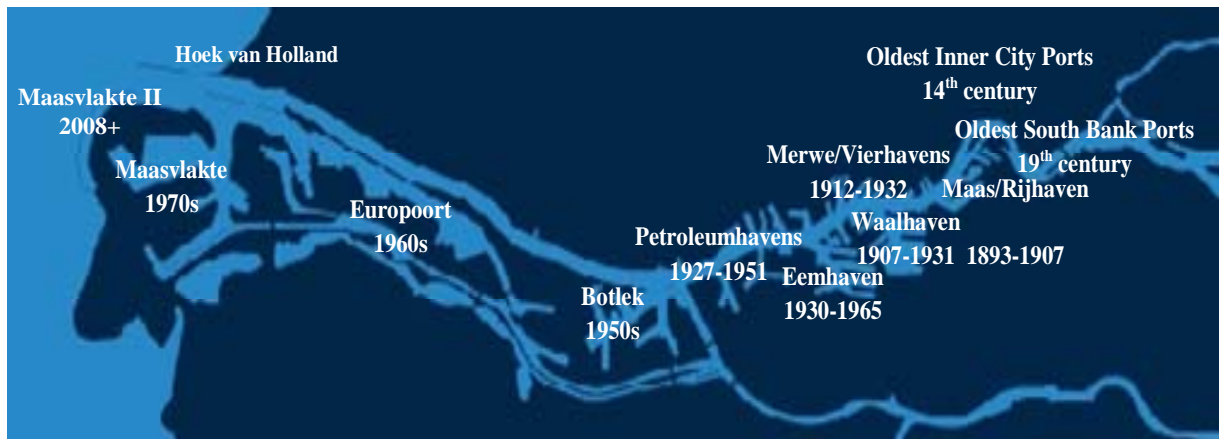
STAGE	SYMBOL ○ City ● Port	PERIOD	CHARACTERISTICS
I Primitive port/city		Ancient/medieval to 19th century	Close spatial and functional association between city and port.
II Expanding port/city		19th - early 20th century	Rapid commercial/industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries.
III Modern industrial port/city		mid - 20th century	Industrial growth (especially oil refining) and introduction of containers/ro-ro require separation/space.
IV Retreat from the waterfront		1960 s - 1980 s	Changes in maritime technology induce growth of separate maritime industrial development areas.
V Redevelopment of waterfront		1970 s - 1990 s	Large-scale modern port consumes large areas of land/water space; urban renewal of original core.
VI Renewal of port/city links		1980 s - 2000+	Globalization and intermodalism transform port roles; port-city associations renewed; urban redevelopment enhances port-city integration.

**Figure 3** Different stages in the traditional port-city interface (Hoyle, 1998: 47)

Starting from the initial port site with small lateral quays adjacent to the city centre in the nineteenth century, Rotterdam's port expansion downstream towards the sea is primarily the product of evolving maritime technologies and improvements in cargo handling. Through twentieth century, the docks and terminals have thus moved tens of kilometers away to land reclaimed from the sea. In the occupation years of World War II – after the German destruction of Rotterdam's historic city centre – the port was the target of heavy allied air attacks because many naval ships were moored there. When the Nazi's were forced to leave Rotterdam in 1944, they dismantled important plant installations and transported them back to Germany. Moreover, large parts of the quay

walls were blown up. After the war, the damage was enormous: seven kilometres of quay walls had been lost, including 40% of the total warehouse surface area (Wijnands, 2010).

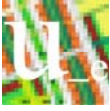
After the war, Rotterdam rapidly recovered. Next to the city centre, reconstruction works focused particularly on the port area. New complexes were built to house the growing petrochemical industry and the upcoming container market (from the 1960s onwards). Indeed, especially from 1945 onwards, port development was not merely about facilitating large volumes but also about industrial development. This dual strategy was based on the idea that the port serves as an excellent location for specific industries (especially the petrochemical industry), where the industry also works to serve the port by providing it with a permanent basis for the supply of cargo. Besides, it was especially this industrial function that would deliver employment to the region.



**Figure 4** The evolution of the Port of Rotterdam from East to West

From the 1950s onwards, the Botlek area and the Europoort area were developed (see figure 4). The Botlek-Europoort ports nowadays comprise one of Europe's major chemical complexes. Port development came at the expense of other functions, but that was widely accepted during those redevelopment years. For example, two villages (*Nieuwesluis* and *Blankenburg*) as well as some nature reservations (*De Beer*) fell prey to the Rotterdam expansion wave. The Maasvlakte area, an artificial peninsula that was claimed from the sea at the end of the 1960s and the beginning of the 1970s, was built next. Finally, from 2008 onwards Maasvlakte II has been under construction. With this final expansion into the North Sea, a total of 2,000 hectares of port land is created. Half of this consists of infrastructure, such as seawalls, waterways, railways, roads and port basins. The remaining net 1,000 hectares is available for industrial sites: container terminals, distribution facilities and chemical and energy industries. The new docks will offer deep water access with a draught of 20 meters.



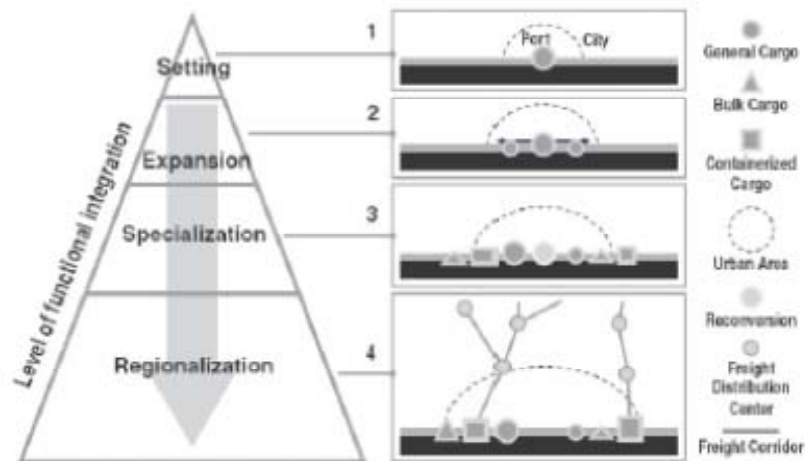


In essence, we have witnessed a westward movement of port development towards the sea, guided by economic logics – e.g. the need for larger and modernized areas, for excellent seaside accessibility, and for areas that allowed for highly negative environmental effects (i.e. outside of residential areas). In many ways, the port turned its back on the city. With the relocation of activities to the west, there was 1) a geographical separation between the city and the port. Not only did this mean that the port disappeared out of sight, it also left the minds of Rotterdam citizens. In the city, the port left behind large areas of obsolete port land, while the increasingly automatized port installations outside of the city produced high unemployment rates among the proud but low-skilled port workforce. In order to cope with shortages for certain technical jobs, more and more foreign workers are brought in by port companies, such as highly skilled Spanish engineers.

### *Port Regionalization*

A second important development that is taking place and that fundamentally restructures the relationship between city and port is port regionalization (see figure 5). Notteboom & Rodrigue (2005) identified a port regionalization phase in port and port system development. The phase of regionalization brings the perspective of port development to a higher geographical scale, i.e. beyond the port perimeter. The port regionalization phase is characterized by a strong functional interdependency and even joint development of a specific load centre and (selected) intermodal logistics platforms in its hinterland, ultimately leading to the formation of a 'regional load centre network'. That is, it implies the development of an efficient and robust logistic chain that links different inland terminals, multimodal platforms, logistic service centres and the connecting corridors into a mainport network. The port is no longer the sole break of bulk point in the movement of cargo. Instead, as cargo flows through many different seaports and inland hubs, the seaport is just one element in the global network of transport flows. As a consequence, ports can no longer expect to attract cargo simply because they are natural gateways to rich hinterlands. Major port clients consider ports merely as a sub-system in the logistics chain. Accordingly, they concentrate their service packages not on the ports' sea-to-land interface but on the quality and reliability of the entire transport chain (Notteboom & Winkelmann, 2001; Van Klink & De Langen, 1999). The creation of these chains are not merely useful for economic reasons. They can create the necessary margin for further growth of seaborne container traffic. Inland terminals as such acquire an important satellite function with respect to the ports, as they help to relieve the seaport areas from potential congestion. Indeed, the port authority of Rotterdam understands that inland ports can help them in facing a wide array of local constraints (e.g. road congestion, lack of available land, environmental issues). Nonetheless, it also works to further distance the city and the port from one another. This makes proper waterfront redevelopment all the more urgent. As Van Hooydonk has argued (2006; 2007), the

more international the maritime and port industry becomes, the more energy will have to be put in embedding the port in the local community. Ports are challenged to improve the public image of seaports and this can exactly be done via proper waterfront redevelopment.

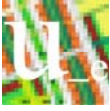


**Figure 5** Schematic representation of port regionalization process (Notteboom & Rodrigue, 2005: 298)

## 2.2 Changing relationships

New economic logics and changing ambitions of both the port and the city make sure that port and city engage in new relationships with one another. Both the seaward movement of the port and the trend of port regionalization foster new relationships between port and city. On the one hand, the city has to engage in new strategies to continue to take advantage of the presence of a large port. On the other hand, the port authorities have to make sure that their desired developments are politically supported by the city, although these developments mainly take place outside the perimeter of the city. Both challenges come together in waterfront redevelopment areas. Such areas have the potential to integrate several spatial claims in ways that deliver mutual gains for port and city. Thus, such areas can contribute to the realization of the goals of both the port and the city. It results in two main strategic planning principles that guide the waterfront redevelopment: economic diversification and the accommodation of housing and other non-port functions.



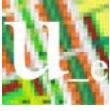


### *Waterfront redevelopment for economic diversification*

Generally speaking, the presence of a large port is perceived to be a source of innovation via the presence of large multinational firms, leader firms and clusters of related and supporting industries. It is through cooperation with foreign ports and other logistic hubs abroad that the port helps to bring in orders for Dutch companies and supports the diffusion of competencies and the further gathering of knowledge in the areas of port management and logistics (Van den Bosch, 2011). In Rotterdam, such chances for innovation are especially sought after in the field of sustainable transport and the energy transition. Both the port authorities and the municipality perceive the greening of port activities as a competitive advantage, as it is increasingly becoming one of the criteria for port choice, e.g. by shipping lines concerned about their environmental image and footprint. Hence, environmental aspects play an increasing role in attracting trading partners and potential port investors. A port with a strong environmental record and a high level of community support is likely to be favored over ports that have weaker records. From the perspective of the city, investments in such expertise produce a diversification in the economy, with a shift from low to highly skilled labor.

Hence, the port and city of Rotterdam invest in innovative solutions for decreasing urban congestion and mobility issues, and producing renewable energy (wind and solar) and bio-based energy sources. The so-called Rotterdam Climate Initiative illustrates the latter. The city of Rotterdam has established this program in order to 'create a movement in which governments, organizations, companies, knowledge institutes, and citizens collaborate to achieve a 50% reduction of CO<sub>2</sub> emissions, adapt to climate change, and promote the economy in the Rotterdam region' (see [www.rotterdamclimateinitiative.nl](http://www.rotterdamclimateinitiative.nl)). This program is developed as part of the global C40 Climate Leadership Group, which is an international body aggregating several large cities wishing to fight against climate change. The objective of the Rotterdam Climate Initiative is to halve the CO<sub>2</sub> emissions of the Rotterdam agglomeration in 2025 compared to 1990. The municipal council has established a package of measures to improve Rotterdam's air quality by using cleaner transport methods and by reducing the emissions of industry and port activities. The plans have been bundled in the Rotterdam Climate Initiative. The search for innovations find a fruitful breeding ground in the old port areas that are located on the port-city interface. After all, the knowledge can be developed and applied at the same time, as the port serves as one big laboratory. Moreover, the presence of such knowledge works to strengthen the port cluster in the Rotterdam area. Finally, it works to attract the type of high skilled professionals to the city.

One element of this strategy is that the port of Rotterdam and the municipality of Rotterdam are strengthening their links with universities and other schools in the area, actively creating a 'knowledge port'. The municipality, the port authority, branch-organization Deltalinqs, and Rotterdam's Erasmus University signed an agreement in 2010 called 'Smart Port', designed cluster the supply of and demand for specialized port



know-how. Research, consultancy and training services for the port are now coordinated within one framework.

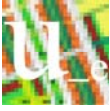
#### *Waterfront redevelopment for housing and other non-port functions*

At the same time, the port areas that lie exactly on the interface with the city qualify as excellent locations for port related and urban functions. The expanding service sector, the related growth of well-paid scientific, managerial, technical and professional jobs, and the subsequent rise in the disposable income of an increasing amount of people, all increase the demand for housing, office, retail, and leisure functions in central and distinct places in the city. The postmodern emphasis on variety and individualism particularly favoured places like waterfronts, offering opportunities for creating not only a mixture of intimate, niche-like environments, but also for finding time and space-specific styles based on the long and important histories of their locations (Norcliffe et al., 1996). Waterfronts now mirror the sociocultural trends of the city and its wider society, rather than the city reflecting the economic vitality of the port. Finally, developing attractive residential areas within sight and sound of the port helps to reintroduce the port into the urban fabric. As such, it can contribute to improve the public perception of port activities. The port is not merely causing environmental problems, but it also allows for the creating of special and highly individualistic ways of living.

The quest for new and improved economic and social relationships from which both the port and the city can benefit becomes manifest in the specific way in which the city of Rotterdam has worked on its waterfront redevelopment. This waterfront redevelopment can be divided into two different waves. The first wave emerged during the early 1980s, when an impressive large-scale waterfront redevelopment program called *Kop van Zuid* was planned and carried out. The second wave concerns the area of Rotterdam CityPorts. Both shall be discussed in the next section.

### **3. Waterfront Redevelopment in Rotterdam since 1980**

In Rotterdam, the City Council overlooks the economic, spatial and social development of the city. In recent years, its main challenges have been to build on the strength of the port and logistics sector, and to diversify the city's economy and expand its facilities. Strategies are focused on making Rotterdam a more attractive location for 'knowledge industries' and 'knowledge workers'. Although the city has surely benefitted from the presence of the port in terms of employment, the trends we describe above have greatly reduced the port's local economic spin-off. Indeed, a major challenge facing Rotterdam and other port-industrial cities is the need to increase the economic participation of its



citizens (i.e. the amount of workers relative to its total population). Compared to other major Dutch cities, Rotterdam has a high unemployment rate among its younger citizens. These youngsters usually have a low level of education, and mainly live in social housing districts located south of the Maas river. In this section, we will discuss how Rotterdam is trying to cope with these challenges through waterfront redevelopment programs.

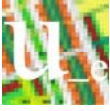
### 3.1 Ambitions of the City

The Municipality of Rotterdam explicitly sees the opportunities offered by the presence of a world port as a means to help solve some of the social problems of the city. The port needs low-skilled labor mainly in logistics and terminal operations. Only one-fourth to one third of the job openings for people with high level of education. However, highly educated workers face less career opportunities in Rotterdam than, for example, in Amsterdam. One third of the jobs in the port of Rotterdam is suitable for school leavers. The demand for technically skilled people (i.e. engineers but also workers with a lower technical training) is high. Experts refer in this respect to a mismatch in the labour market that can only be solved by realizing a shift in the choices people make in terms of education and career path. The port of Rotterdam (but also Amsterdam) is facing an image problem, or rather, the lack of any image. Too many people do not take working inside the port into consideration. On top of this, many people with the required schooling tend to work in a technical job for a limited period of time.

At the same time, attracting high-income residents became an explicit municipal goal as policy makers believed that the city has a shortage of middle-class households. Making sure that the many students that graduate in Rotterdam stay in the city is also part of this strategy. The main way to achieve this goal is by creating new residential areas in Rotterdam that suit the needs of these highly skilled workers, i.e. large luxury flats and single-family homes.

Another problem is that the ongoing growth of the port, especially its growth in terms of an efficient cargo handling facility (cargo hub), becomes more and more automatized. This greatly impacts on the quality of life in the city. Huge transport flows pass highways, rail and rivers that cut right through the residential areas. As a consequence, more and more citizens perceive further port development in terms of negative effects for the local community – i.e. road congestion, intrusion of the landscape, noise and air pollution and the use of scarce land. This image is reflected in eroding public support on the local level and in increasing problems to secure the license to operate and license to grow for the port.

Despite the global playing field within which the port operates, reinvention of the relationships between the port and its local environment are required. Not only for



reasons of public support, but also because the local embeddedness of the port calls for a strong and innovative port cluster that has its point of concentration at its home base, i.e. Rotterdam. Indeed, it seems plausible to assume that a greater diversity of firms in a portcity stimulates economic growth and innovations. For one, there are more possibilities for crossovers. According to Jacobs (1961) diversity of functions and economic actors is very important to keep an area vivid and economically viable. Moreover, a diverse population could better resist external shocks and economic crises. Yet, a more homogeneous population might be better able to engage in joint problem solving, product development and knowledge exchange. Firms need to have some sort of 'connection' and 'speak each other's language' in order to benefit from each other. Thus, variety is important, but the kind of variety is important as well; it needs to be related to one another in some way (cf. Frenken et al., 2007). Nonetheless, both within the logics of port and city development, more diversification seems to be useful. This situation is an excellent example of the more generic idea that tensions have emerged out of the intersection of the 'space of flows' (port development as part of logistic chains) and the space of places (locational dynamics at the home base), as Castells has elegantly described in 'The Rise of the Network Society' (1996).

### **3.2 The First Wave: Expanding the Inner City and the Leap South**

Prior to the corporatization of the port authority in 2004, the municipality was both responsible for urban and port development. As discussed above, the City Council has always invested heavily in the expansion of the port. There is no doubt that the success of the port has also made Rotterdam develop into a big city. This relationship of symbioses, where big ports create big cities, has however changed dramatically since the 1960s as a consequence of the trends we described earlier. In essence, the movement of the port resulting from these trends has deprived large areas near the city centre of their port function. In fact, it was from the early 1980s onwards that the city of Rotterdam started to feel the consequences of the outward movement of the port on a larger level of scale. However, at that time, city planners and policy makers had already come to understand the potential of the abandoned port areas near the city centre. More specifically, it was an excellent opportunity to rethink the identity of the city. Hitherto, the port areas served as a geographical barrier between the city centre and the Maas river. More specifically, the river that runs so prominently through the heart of the city was not really part of it. The river quite literally split the city into a rich north bank and a poor south bank, also splitting up the city in social terms. Even though the people lived in one and the same city, the river Maas – though fundamental to the success of the port – prevented the creation of a shared urban identity for urban dwellers.

When the old port areas were abandoned, this would slowly start to change. The city adopted a pro-active waterfront redevelopment strategy, in which the crucial importance

of the river Maas for 'the DNA of the city' was explicitly recognized. Throughout the 1980s, the municipality engaged in large scale master planning in order to revitalize the older port areas that lie between the city centre and the river. The so-called Rotterdam Waterfront Program was established, and the main ambition was to bring back the river into the heart of the city (figure 6).



**Figure 6** Bringing the Maas River back into the DNA of the City (view from west to east, 2009)

Instead of merely perceiving the river Maas as the economic motor of the port, the river was now perceived to be the unique selling point of the cultural identity of Rotterdam. The development of ports had divided the city from the river, but now the port areas were abandoned, it was time to restore the link. The development strategy that was to bring back the river into the core of the identity of the city, revolved around two main developments: (1) restore the link between the inner city and the river (thus extending the inner city towards the river) and (2) bridge the physical and psychological barrier between the north and south bank of the river. The latter would be possible when the inner city and the river were not divided by the port areas any longer.

From the late 1980s onwards, this large scale waterfront redevelopment strategy was being enacted by the city planning department. The old port areas joining both sides of the river all held some unique and authentic characteristics. It was attempted to redevelop each area separately, building upon their unique qualities. This required a keen



'sense of place' of the city planners and project developers, implying a sophisticated understanding of those characteristics that make a place special, including those characteristics that foster a sense of authentic human attachment and belonging (cf. McCann, 2002). It resulted in different tailor made area plans for at least four different areas:

#### *Oude Haven (Old Port)*

The 'Old Port' refers to the location where the port development of Rotterdam actually began between 1590 and 1615. Prior to the 1980s, it was thought that the ports could best be filled in. However, during the 1980s, city planners reasoned that it was exactly the presence of these ports (open waters, quays, bridges) that gave the areas their unique character. Therefore, the open water remained in place, as well as several of the historic port buildings. For example the oldest skyscraper of Europe, the so-called White House (dating from 1896) was not demolished, as was the initial plan. Instead, it was restored and nowadays it serves as one of the landmarks of the Old Port area. When rebuilding the old port area a lot of attention was paid to experimental architecture, which resulted in the famous cube houses designed by architect Piet Blom in 1984. In addition, the area was well suited for leisure functions, like bars and restaurants. Anno 2012, the *Oude Haven* has become one of the most vibrant parts of Rotterdam's inner city, where people go for drinks and dinner, enjoying the scenery of holiday crafts (see figure 7).



**Figure 7** Impression of the 'sense of place' in the Old Port area of Rotterdam (2009)



*Leuvehaven, Wijnhaven & Zalmhaven*

At the same time, two other old ports that were immediately adjoining the old port area described above were also revitalized. In these areas, it was not so much leisure, but housing and working that fit their sense of place. In order to strengthen the inner city, more people were required to actually live there in order to create the kind of critical mass that a city needs for becoming a truly dynamic world city. As Rotterdam was especially lacking houses for middle and higher incomes, and as the old port areas provided for the kind of scenery required for the quality and distinctiveness that such households demand from their residential areas (cf. Norcliffe et al., 1996), housing was to become the main function of these old port areas. Indeed, during the past decades several skyscrapers have been built in these old port areas that overlook the river Maas. The buildings have been designed by renowned architects, making up for an impressive skyline (see figure 8).



**Figure 8** View on the Leuvehaven with newly built skyscrapers inside the Wijnhaven in the background

### *Scheepvaartkwartier & Parkhaven*

The Scheepvaartkwartier or 'Shipping Quarter' had already been one of the more prestigious residential parts of the city. The old port barons that ran the port until the second half of the twentieth century resided here. Their grand monumental residences have been restored and the *fin de siècle* atmosphere has remained in place. Some beautiful promenades have been established and nowadays the 'rich and famous' of Rotterdam dwell here. The green atmosphere that is provided by the many trees that surround the area, make up for an excellent residential area. The adjoining *Parkhaven* harbors the central city park, which is important for family recreation but also for the necessary peace and quiet that big and buzzing cities require (see figure 9).



**Figure 9** Scheepvaartkwartier and Parkhaven (2009)

### *Kop van Zuid (Head of South)*

Next to the old port areas on the north flank of the river Maas, the redevelopment of some of the abandoned port areas on the south flank was also part of the large scale waterfront redevelopment plan of the city of Rotterdam. It was especially in these areas in southern Rotterdam that the effects of the reduced spin off in terms of port



employment were felt. The large scale project was called 'Kop van Zuid' (*Head of South*) entailed a mixed-use development of housing, offices, leisure and infrastructure. Social goals have played a major role in the development of the Kop van Zuid. A central vision for the Kop van Zuid was for it to become an economic, social, and physical unifier for the city, which has historically been divided by the river. Attracting high-income residents became an explicit municipal goal as policy makers believed that the city has a shortage of middle-class households. The Kop van Zuid created new housing in Rotterdam of types which were generally lacking: large luxury flats and single-family houses. Planning for the project began in the late 1980s, and the development progressed rapidly after the completion of the iconic 790-meter (2,600 ft) cable stayed Erasmus Bridge in 1996, which linked the development (and Rotterdam South) with the city centre on the north side of the river. The bridge was crucial for the linking the north and south flank to one another, and it has already become a landmark of the city of Rotterdam.

The Kop van Zuid has become an integral part of the inner city of Rotterdam, implying that the river Maas has actually become integrated into the city centre. The first part of the large scale redevelopment, i.e. *the Wilhelminakade*, is almost completed. This old port area has been redeveloped into some kind of little Manhattan and harvests the tallest residential building of the Netherlands (the New Orleans Tower, 158 metres) and several of the tallest office buildings. The Rotterdam Port Authority has also moved to the head of the pier after its privatization in 2004. The World Port Centre lies next to the famous Hotel New York (see figure 10).

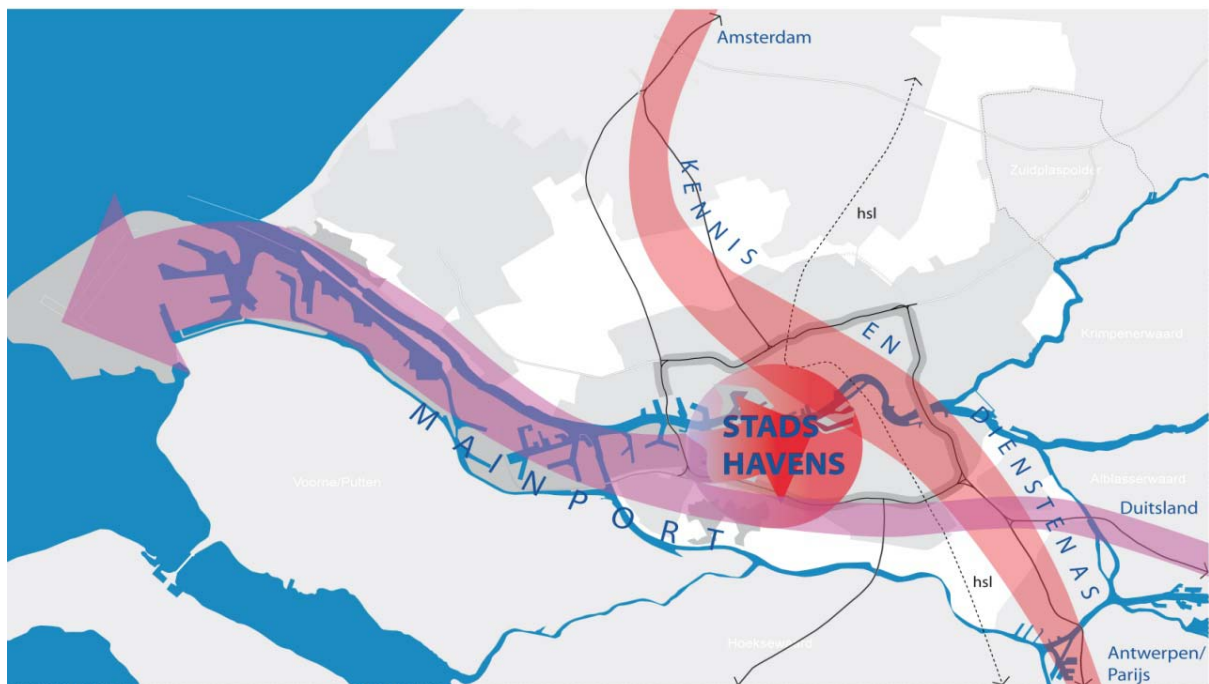


**Figure 10** Image of the Kop van Zuid's Wilhelmina Pier when completed in 2020.

In sum, during the 1980s the city of Rotterdam clearly adopted a pro-active and daring waterfront redevelopment program in order to bring back the river into the core of Rotterdam's identity. Development plans were tailor-made and based on a sophisticated understanding of the sense of place of the specific port areas under construction. This implied to build upon the local heritage and the other unique characteristics of the respective ports. Anno 2012, we can already see that the two main ambitions of the large scale redevelopment strategy have become a success. On the one hand, the river is now fully integrated into the urban fabric of the inner city, while on the other hand, the barriers between the north and south flanks of the city are breaking away.

### 3.3 The Second Wave: Rotterdam CityPorts

Where the city and the port grew apart from each other in the twentieth century, the city and port are now positioning the *CityPorts* or 'CityPorts' project as the place where new connections are being made. And naturally, one cannot do that all by oneself. The port authority would like to improve their competitive position not only by remaining the largest port in Europe, but, in particular, also the smartest and most sustainable port in the world. At the same time, city authorities are looking for new economic sectors which, even in these difficult economic times, will be able to strengthen the profile of the area – which has now been unilaterally focused on classic port functions. These two ambitions come together in CityPorts. In this area, where the city and the port meet (see figure 11), space has been created to develop new activities which are important to both the city and the port.



**Figure 11** CityPorts or CityPorts Rotterdam is the place where city and port meet.

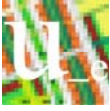
The CityPorts project started in 2002, as a large-scale transformation plan. Port activities in this remaining portion of the harbour – located inside the Rotterdam highway rim – were largely to disappear from this area. Hence, the city made ambitious plans for the large-scale urbanization, much like they did during the first wave. In the most radical proposals, a new football stadium was to be built in the Waalhaven. The Maritime Museum, prominently located in the city centre, was to be moved to the area too. These plans went too far. City and port decision makers had to find an alternative strategy. This alternative was agreed upon in 2007, just before the outbreak of the financial crisis. The core of the new approach was comprised of the naming of five 'wild cards': five different development perspectives for five parts of the CityPorts area. Each 'wild card' grew out of the dynamics still existing inside the area. In order to pursue these development perspectives, the CityPorts project organisation tried to form strategic alliances with businesses, knowledge institutions, and government institutions.



**Figure 12** Birds-eye view of CityPorts: Eemhaven and Waalhaven (right), Merwehaven and Vierhavens (left)

For CityPorts, port and city planners consciously decided not to establish a traditional 'master plan', with a corresponding real estate program and plans for new infrastructure. The development of the area was not to become fully dependent on large-scale public





investments (which were unavailable), like the new subway and bridge that fuelled the development of the Kop van Zuid. After all, shortly after the financial crisis hit the Netherlands, such large-scale investments gradually faded into the background. If CityPorts had attached itself to, for example, the plans for a new bridge, the project would most likely have become defunct. Instead, the five wild cards strategy appeared to be an excellent match to the new reality in Rotterdam. The wild cards did not tie down the future with blueprint-type plans, and thus were highly adaptive to the dynamic situation. The alliances that formed around each wild card were able to adjust and develop their plans as changes occurred. We will outline the content of each wild card below.

### *Volume & Value*

The first two wild cards are aimed at exploiting the economic potential of the CityPorts area. *Volume & Value* anticipates on the opportunities that the area could provide for port-related activities with added value for the region – like maritime services, port-related education and smaller, emerging economic sectors like the recycling industry. Various recent developments from private parties in the area demonstrate the intrinsic strength of the location. Also, the term *Volume* indicates that large-scale transshipment will stay in the area, although new logistical systems and a change in *modal split* (from sea to road, train, and inland waterways) will provide opportunities to intensify port operations threefold. An excellent example of this wild card is the emerging recycling industry. Due to the increasing scarcity of raw materials and the expected increase in transport costs, the recycling – or better yet – ‘upcycling’ of waste is becoming an increasingly interesting option. This is an interesting segment for the port and transport sector. Ships, trains and freight trucks that now return empty from the surrounding countryside can instead, from throughout Europe, immediately take back recyclable waste streams. At the same time, it is a very interesting segment for the city due to the labour intensive nature of this emerging industry. In combination with the coupling of knowledge institutions and schools, this new sector can lead others for new developments in knowledge and new training and employment opportunities for the young. CityPorts is ideally suited to this new branch of economic sports. The area has multi-modal access, potential employees live in the neighbourhood, and plot sizes are suitable for this sort of activity. In addition, there are opportunities for synergy with municipal processing of waste material. The CityPorts project organisation tries to provide maximum facilitation for similar initiatives. If necessary, the organisation mediates between the initiators, the port authority, and municipal organisations.

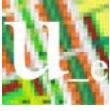


### *Reinventing Delta Technology*

The second wild card makes use of the space offered by CityPorts for applied knowledge in the areas of water and Delta technology. CityPorts is outside of and bordered by heavy dikes that must protect the residential neighbourhoods within it from high water. The entire region lies several metres below sea level and is faced with the difficult task of ensuring water security while there are rising sea levels. In addition, the Delft University of Technology is highly knowledgeable about water management. Rotterdam is a city with considerable physical space and numerous secondary technical training institutions, making it the place where this water management knowledge can be applied. In addition, CityPorts offers, in particular, the opportunity to develop empty docks and dikes that are several kilometres long. For example, for floating construction, small-scale forms or water-resistant construction, and for the creation of dikes that decrease the barrier between inside and outside for the region. In combination with *Clean Tech Delta*, a number of institutions are working together to develop and apply knowledge and techniques for this field (see figure 13). The arrival of the National Water Centre in CityPorts, as an international portal for the Dutch water sector, should be attractive for companies that would like to excel in this sector.



**Figure 13** Elaboration of the 'wild card' *Reinventing Delta Technology: Clean Tech Delta*.



### *Crossing borders & Floating Communities*

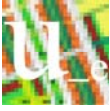
The following two wild cards are more oriented to social and cultural opportunities offered by CityPorts. The wild card *Crossing Borders* demonstrates the potential of the area to mentally bind together the city and the port again, which consequentially binds them physically as well. The development of the RDM Campus is the best illustration of the opportunities that this new port and city connection offers. The port is predicting a shortage of highly-skilled personnel, and the large number of youngsters in the city could produce the workforce needed. However, most students in Rotterdam are only moderately interested in a technical profession. Therefore, the port and municipal educational institutions have taken the initiative together to establish the RDM Campus at a former shipyard in the middle of the CityPorts area (figure 14). Secondary and higher educational institutions work together here with the surrounding companies in order to train the youth. The companies offer work and internships and the students, after their studies, can rent out affordable office space on an open floor of the renovated factory situated next door. Many smaller engineering companies also have their work spaces here.



**Figure 14** RDM Campus: an attractive surrounding for technical education

### *Floating Communities*

This fourth wild card exploits the CityPorts' potential for an alternative form of waterfront development. Empty docks lend themselves to the actualisation of floating constructions. Here, different parties are demonstrating their interest in the Rijnhaven, where the first floating pavilion was realized (see figure 15). By building on land and water, a distinctive urban environment is created for both residential and commercial uses. The maritime business services industry is interested because companies see opportunities for a distinctive business environment that contributes to their identity and image. Both the



port and the city see opportunities due to the possibility to develop a new type of urban living that could bind middle and higher income groups to the city. It is notable, but also understandable, that the port is also interested in these developments. After all, if the port would like to expand and modernize the port to be more efficient and clean, than it must support the development of the region as a whole – in economic, social, as well as environmental terms. The pioneers that would like to create the first *floating communities* of CityPorts have already registered themselves. The CityPorts organisation provides the frameworks within which the floating constructions may be built, and tries to attract and facilitate the initiators. The major driver for this is an international design competition for the Rijnhaven – the part of CityPorts that lies closest to the city centre.



**Figure 15** Floating pavilion in the Rijnhaven, near the city centre.

### *Sustainable Mobility*

Finally, the fifth wild card aims to use the features of the water for transporting people and goods. The CityPorts area has a kilometres long quay. At almost any location in the area, the water is no more than a few hundred metres away. That offers opportunities for public and private transport over the water. Water, naturally, is crucial for the transport of goods. The city and port both have an interest in improving the share of inland

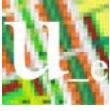


transport by all modes of transport. Inland shipping, for example, has low emissions, does not impede on motorways and has a fairly low chance for disturbances. It is, therefore, a very reliable and clean mode of transport next to trucking. CityPorts tries to facilitate the parties that would like to take initiative in this area and is making pre-investments for future public transport over water.



**Figure 16** The wild card Sustainable Mobility is about using the water for transport of people and goods.

From these five wild cards with their accompanying examples, it appears that CityPorts really has a different strategy than in the *Kop van Zuid* area. Inside CityPorts, the port's economy still plays an important role. Large-scale, top-down plans frequently associated with expensive (pre)investments in infrastructure are absent. In CityPorts, the city and the port have tried to work together in an incremental, and thus relatively crisis-proof way. Hence, port and city planners have tried to find solutions that benefit the interests of the whole Rotterdam region.

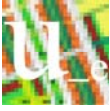


#### **4. Conclusion: Rotterdam's rediscovery of the waterfront**

The waterfront redevelopment projects in Rotterdam in this paper illustrate the changing relationship between city and port. During most of the nineteenth and twentieth century, city and port functions followed relatively separate development trails, and the relationship resembled a living-apart-together (lat) relationship. The increasing scale of port operations called for large expansion plans, which resulted in an on-going westward movement of the port towards the North Sea. The abandoned port sites near Rotterdam's city centre were reurbanised. It resulted in a clear division between areas with port opposed to urban functions, and the port disappeared literally out of the sights and minds of Rotterdam citizens.

During the past 30 years, we have seen a slight change in the relationship between city and port. More specifically, we discussed two main waves of waterfront redevelopment in Rotterdam. During the first wave – the urban transformation of abandoned port areas – were not so much meant to bring the port back into the city, but to bring the river back into the identity or DNA of the city. This resulted in a pro-active and large scale waterfront redevelopment program meant to integrate the river Maas into the urban fabric of the inner city, simultaneously demolishing the physical and psychological barrier between the north and south bank of the river. While redesigning the old port areas concerned, it was of fundamental importance to use existing place qualities as a point of departure. There was a great ambition to maintain and facilitate the existing sense of place, which has resulted in several distinctive but authentic redeveloped port areas for residential and public functions.

Although the first wave of waterfront redevelopment was successful, the second wave demanded a totally different redevelopment strategy. The point of departure was totally different. For one thing, the CityPort area was not located in the vicinity of the inner city, as was the case with the old Port areas that were being redeveloped during the first wave. On the contrary, the CityPorts area located in the periphery of the urban fabric. The case of CityPorts shows that it took a while for both the city and port planners to develop a sophisticated approach with an appropriate sense of place. While CityPorts was originally thought to follow a similar transformation trajectory as the Rotterdam's older ports, the ambitions of both city and port authorities changed. The city became more and more convinced that the solution was not to be sought in large scale urban development programs. Partly triggered by the consequences of the economic crisis, it was necessary to gear down Rotterdam's planning ambitions and find new ways to develop the enormous CityPorts area. Moreover, the municipality was – and still is – in the process of redefining its role and public tasks, which means that it opts for a more modest and facilitating role in the city's development. Large scale redevelopment plans do not sit comfortably with such a role.



Today, the municipal focus in Rotterdam is on creating a detailed understanding of the local dynamics of a specific area. Existing qualities of the area under consideration form the point of departure for triggering an incremental, 'bottom-up' process of change. Obviously, such an approach results in a different perspective on waterfront redevelopment – a perspective in which port functions are not rapidly replaced by urban functions. Port and city are allowed to co-evolve in an organic and harmonic way. This calls for specific residential areas, which can bring the port back into the hearts and minds of the Rotterdam citizens. And it calls for attracting specific economic niches that strengthen both the urban and port economy. Finally, the waterfronts of the CityPorts area are perfectly suited for facilitating urban functions in need of extensive spaces that cannot be found elsewhere in the city. All these functions are important for both the city and the port. Previously a sole affair of the city, the port authority now takes a much more pro-active role in the redevelopment of waterfront zones in Rotterdam. This pro-active engagement of the port authority is deliberately meant to create public support for on-going port activities elsewhere in the region (cf. Merks et al., 2004; Van Hooydonck, 2006; 2007).

In terms of changing relationships between port and city, both the inner city waterfront redevelopment program and the Rotterdam CityPorts project show that new relationships have been emerging during the past decades, although both in a fundamentally different way. The first waterfront redevelopment program was mainly an urban planning affair. Due to this program, the river has integrated into the inner city and has become a true part of the identity of Rotterdam. The barrier it once was, has now been lifted. The second, Rotterdam CityPorts project shows how port and city planners have come to share ambitions and goals. Port and city authorities have learned that they are mutually dependent on one another for the realization of those ambitions and goals, and that for this reason, relationships need to be intensified.

As the current situation in Rotterdam is quite new, the process around the CityPorts project is not always unravelling smoothly – as is the case in almost all true love stories. It is a process of give and take, and it is also about flexibility and patience, as it is not always that easy to find joint solutions. Therefore, the challenge for the future is to constantly look for such joint solutions. Development strategies need to be firmly embedded within the existing local specifics of the different CityPorts' locations, as the era of large-scale redevelopment schemes is now both unrealistic and undesirable.

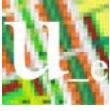
Despite the increasing importance of the global playing field of the Port of Rotterdam, its home base will remain in Rotterdam-Rijnmond region. It is at this specific location where the largest seagoing vessels enter the European continent, and where one of the world's largest petrochemical clusters has found its place. For reasons outlined in this paper – public support, strengthening the port and urban economy, making the city more attractive by creating diversified residential areas, etc. – a joint development strategy for the CityPorts area is required if the port's home base is to function smoothly (see figure



17). Mutual dependencies should be recognised, because only then can city and port develop into the twenty-first century in good harmony. It will ensure that the LAT relationship between port and city will become a true love story once again.



**Figure 17** The CityPorts Area in Rotterdam



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