BLUE SPACE

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INTRODUCTION

The maritime industry and water are inextricably linked—one cannot exist without the other. Large industrial buildings are located on the waterfronts, often forming a physical barrier between the water and the surrounding neighbourhoods. These buildings, where amoung others ships are constructed, are often fenced-off areas, restricting public access to the waterfront and creating a sense of separation from the water.

However, not all shipyards remain in active use. Abandoned maritime buildings present an excellent opportunity for adaptive reuse, offering a chance to reconnect communities with the water and its rich heritage[1].

An example of this barrier is the former Delta shipyard complex located on the outer dike area called T' Zaagje in Sliedrecht. Sliedrecht is a part of the Martime Industry heritage line, this name is used to describe the area comprising Kinderdijk, Dordrecht, Sliedrecht, the Biesbosch and Gorinchem. This heritage line possesses a distinctive appeal due to its array of industrial maritime structures, exemplifying the intricate relationship between industrial development, the surrounding neighborhoods and its waterfront. With this heritage line the municipality hopes the keep its maritime industry heritage alive[2].

The Delta Shipyard serves as a compelling example of the importance and necessity of preserving maritime heritage. This complex has remained uninhabited for a significant period and has fallen into a state of disrepair[3]. Additionally, the building acts as a physical barrier, separating the waterfront from the surrounding neighborhood.

Through the adaptive redesign of the Delta Shipyard and similar industrial structures, both tangible and intangible heritage can be revitalized. This process not only preserves the historical significance of these sites but also helps to reconnect people with the waterfront, fostering a renewed connection to their maritime heritage.

To successfully repurpose these old structures and restore the community's connection to the waterfront, it is essential to first understand how these areas were historically used and how they have evolved over time.

Additionally, exploring the significance of reconnecting people with the water is crucial. The research will delve into why this connection matters and the impact of proximity to water on individuals and communities. Insights from this research will inform thoughtful design decisions for repurposing these historic maritime buildings, ensuring they serve as meaningful links between people, the water, and its heritage.

1. Centraal Bureau voor de Statistiek, "Minder Leegstaande Woningen, Kantoren en Winkels", 13 december 2022.

2. "Zuid-Hollandse Erfgoedlijn Waterdriehoek Wordt Maritieme Industrie".

3. Gemeente Sliedrecht, Afdeling Ruimte, Team VROM en Lipman, "Dijkvisie Sliedrecht, 2017 - 2027".

In order to achieve this objective, the following research question has been formulated.
"How can the adaptive reuse of maritime industrial buildings and sites enhance the relationship between the local neighbourhood and the waterfront?"

The initial phase of the research focuses on the evolving relationship with the waterfront. To achieve this, a collection of paintings, drawings, and photographs is assembled, illustrating how the Dutch people's connection to their waterways has transformed over time. This visual narrative provides insights into how water has shaped life in the Netherlands over the years.

The study also seeks to explore why people are drawn to water and what psychological, emotional and spatial aspects that make proximity to water so essential to well-being and identity. Wallace J. Nichols' Blue Mind (2020) highlights the psychological and emotional attraction of water and its positive effects. Complementary research by Foley and Kistemann (2015) on the concept of 'healthy blue spaces' and Kaplan's (1995) work on the restorative qualities of natural environments further enriches the study.

The findings from this study can be used to guide the design and adaptive reuse of buildings and sites located near waterfront areas.

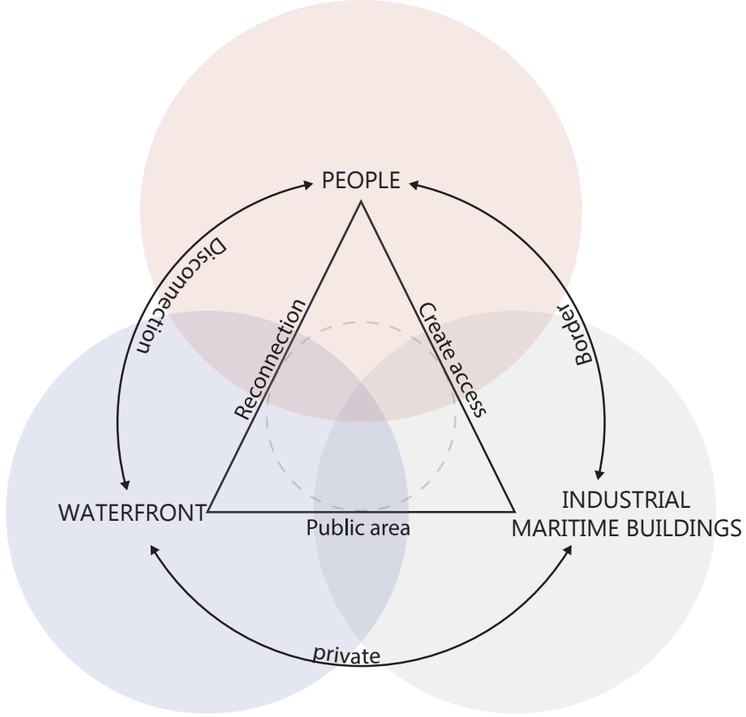


Figure 1: Research scheme

A HISTORY OF THE NETHERLANDS AND ITS WATERS

For centuries, the Netherlands has maintained a close relationship with its waterways. Water management emerged around 1200 CE, characterised by the construction of dikes and polders. This approach aimed to create safer living spaces while maintaining access to water[4]. Shaped by an intricate network of rivers, canals, and the sea, the Dutch landscape reflects a balance between water as a source of prosperity and a looming threat[5].

The maritime industry has played a significant role in the development of the Netherlands and its water network. During the Golden Age, the Dutch trading industry was the largest in Europe for a considerable period of time. The growth of the Dutch economy commenced in the 1580s and continued until the 1650s, when other countries began to surpass the Netherlands in economic terms. This period of economic growth had a significant impact on the shipping industry. Although the Netherlands did not retain its position as the largest trading nation, the maritime industry still plays an important role for the country[6]. However, over time, the maritime industry underwent serious changes.

How has the maritime industry shaped the interaction with water, and what spatial characteristics can be observed? To explore this, a collection of images have been collected, spanning from the Sint-Elisabeth Flood of 1421 to the late twentieth century.

Figure 2: Sint Elisabeth Flood, 1490, Rijksmuseum, Amsterdam,

Figure 3: Groeten uit Rotterdam. 1899. Archieven.nl

4. “Dijken van Nederland”, Geografie.nl, z.d., https://geografie.nl/artikel/dijken-van-nederland.

5. Mostert, “Water And National Identity in The Netherlands; The History Of An Idea”.

6. Rowen e.a., “Netherlands | History, Flag, Population, Languages, Map, & Facts”.

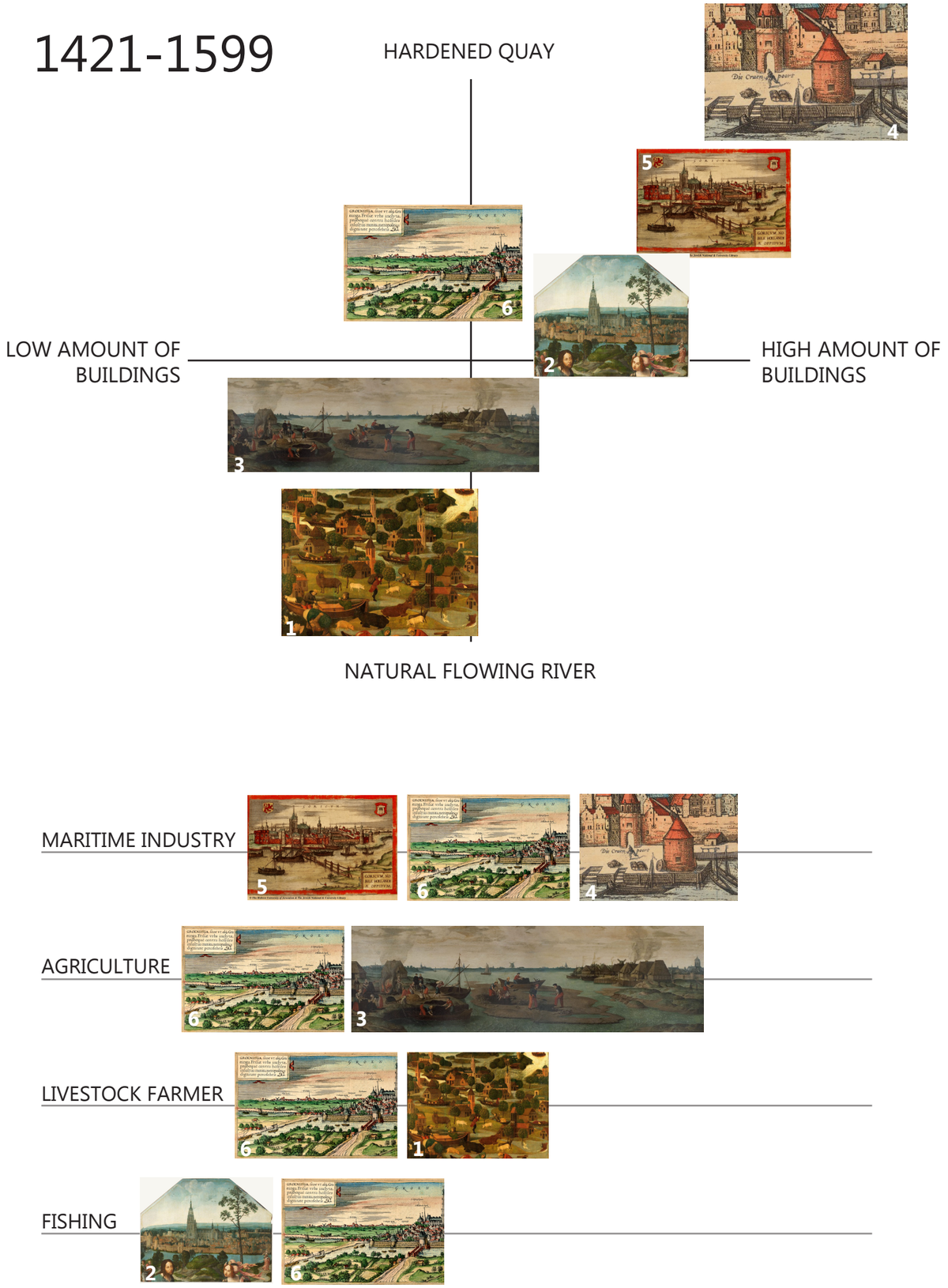


Figure 4: Darinkdelven. 1540. Stadhuismuseum Zierikzee

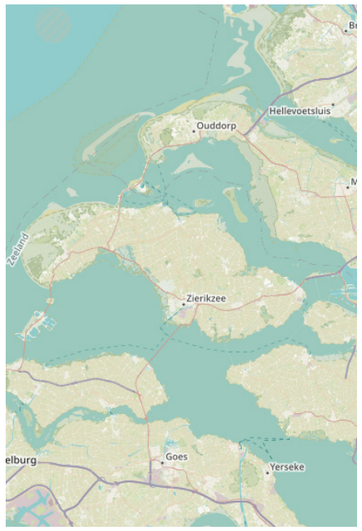


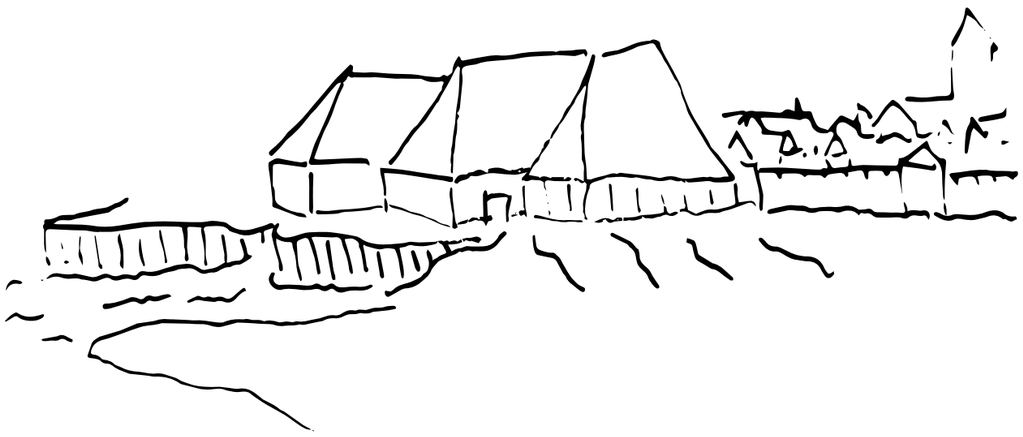
Figure 5: Zierikzee, Openstreetmap

ZIERIKZEE 1540

De painting dates from 1540s and this painting is located nearby Zierikzee. It shows people working on the land, mining darink, extracting salt from the peat. After collecting the darink the women burn the darink in order to collect the salt[7].

On the right side of the painting, two distinct types of towns are visible. The houses situated in proximity to the water's edge are distinct from those located farther inland, behind the city wall.
The houses situated in close proximity to the water's edge are approximately one metre above the water level. The quay is reinforced with wooden beams on its side. The beams create a boundary between the land and the water, yet in areas where the beams are absent, a more organic transition is observed.

7. Veeren en Laarhoven, "Darinkdelven".



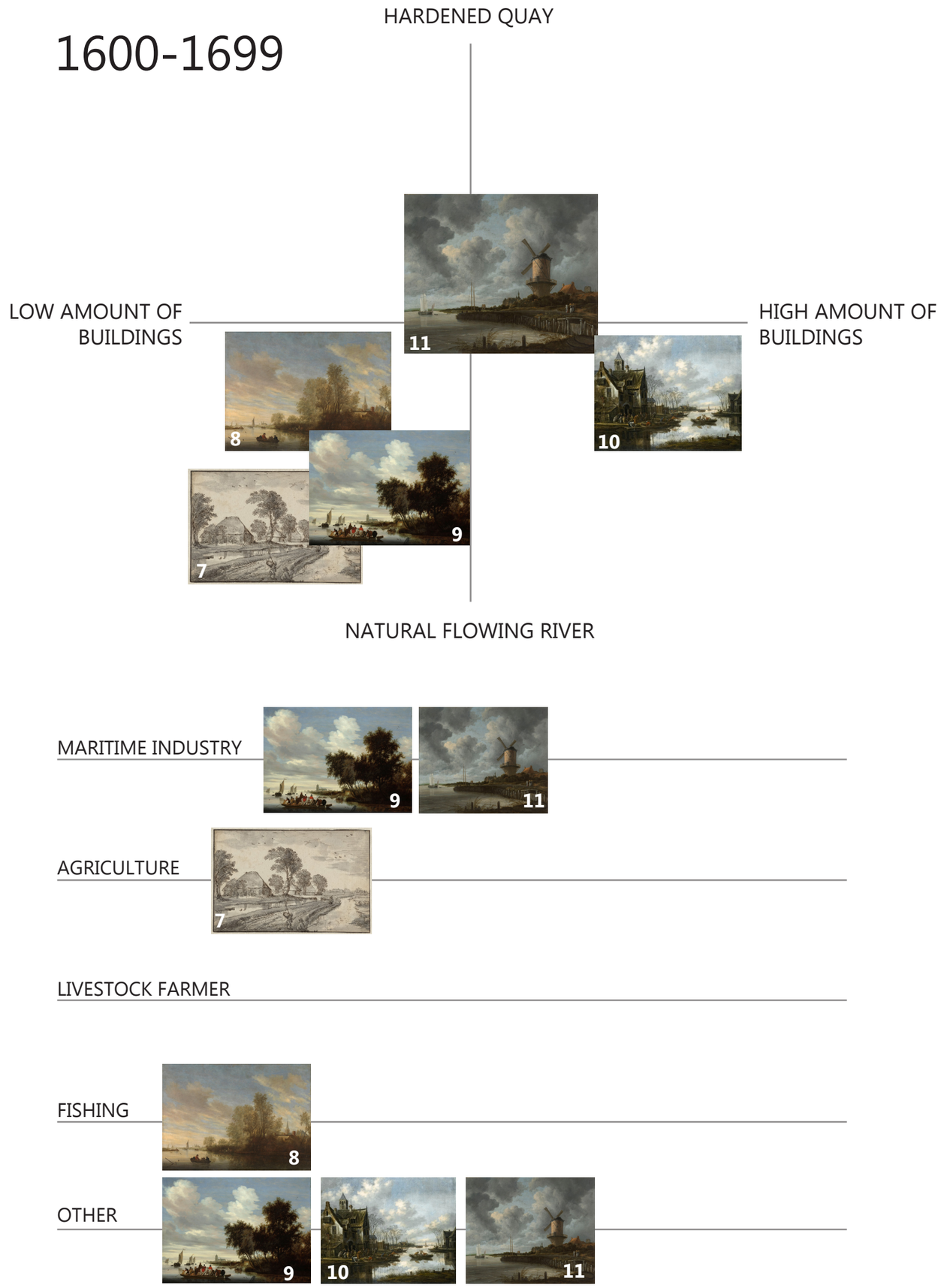
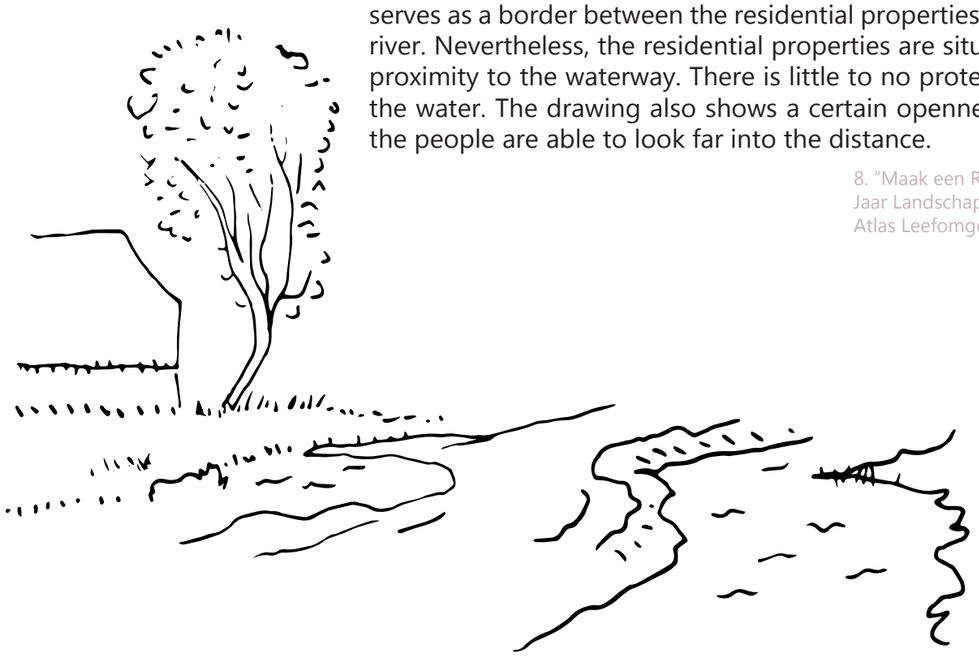


Figure 6: Claes Jansz. Visscher (II). Weg tussen sloten in een polder met boerderijen bomen. ca. 1615 - ca. 1620. Rijksmuseum

1620 BETWEEN POLDERS AND PEAT RIVERS

In the 17th century, the region of North Holland was characterised by the presence of a substantial quantity of peat[8]. Given the proximity of this illustration to Amsterdam/Haarlem, it reasonable to suggest that the rivers depicted are natural peat rivers. The road serves as a border between the residential properties and the peat river. Nevertheless, the residential properties are situated in close proximity to the waterway. There is little to no protection against the water. The drawing also shows a certain openness and scale, the people are able to look far into the distance.

8. "Maak een Reis door 12.000 Jaar Landschapsgeschiedenis | Atlas Leefomgeving".



1700-1799

HARDENED QUAY

LOW AMOUNT OF BUILDINGS

HIGH AMOUNT OF BUILDINGS

NATURAL FLOWING RIVER

MARITIME INDUSTRY

AGRICULTURE

LIVESTOCK FARMER

FISHING

OTHER

1800-1899

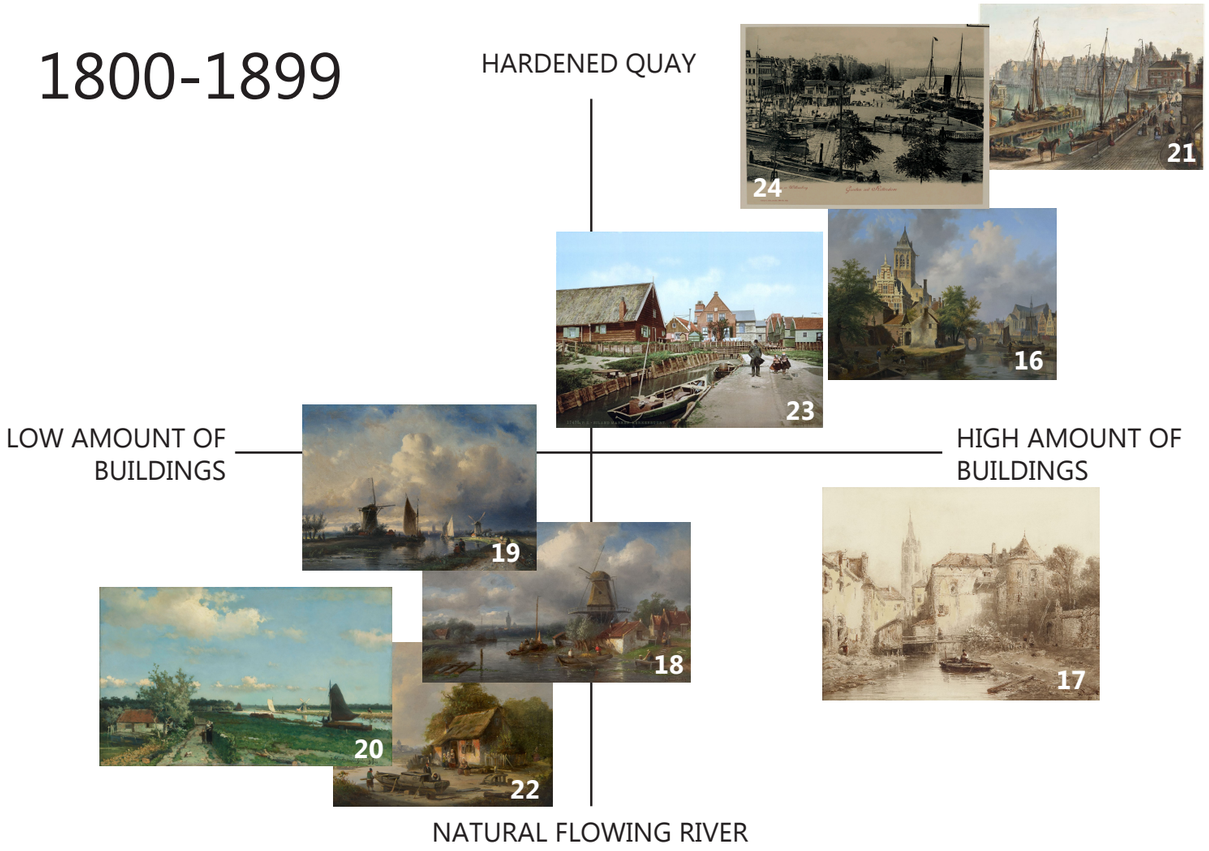


Figure 7: J.A. van der Drift. Damrak Amsterdam. 1870. Stadsarchief, Amsterdam

AMSTERDAM 1870

The illustration was created by J.A. van der Drift in 1870 and depicts Amsterdam, the area surrounding the Damrak and the Oudebrug.

The vessels depicted in the illustration are known as “beurtschepen.” These beurtschepen are utilized for the transportation of both passengers and goods. This enterprise experienced considerable growth during the 1880s. The boat moored on the quayside was one of the earliest steam-powered beurtschepen[9].

The illustration presents a clear dichotomy between land and water. The edges are characterised by a linear, vertical orientation. In the foreground, a section of the pavement slopes gently towards the water. This has been done to facilitate access to the water and the boats. Given the high demand for mooring space in a large city such as Amsterdam, wooden docks have also been constructed. The accessibility and proximity to water plays an important role in Amsterdam, for the people but also for the industry.

Figure 8: Topotijdreis, map Amsterdam 1870

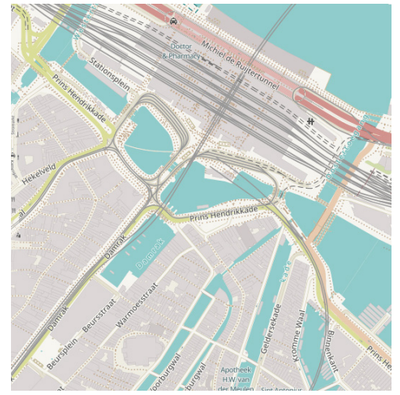
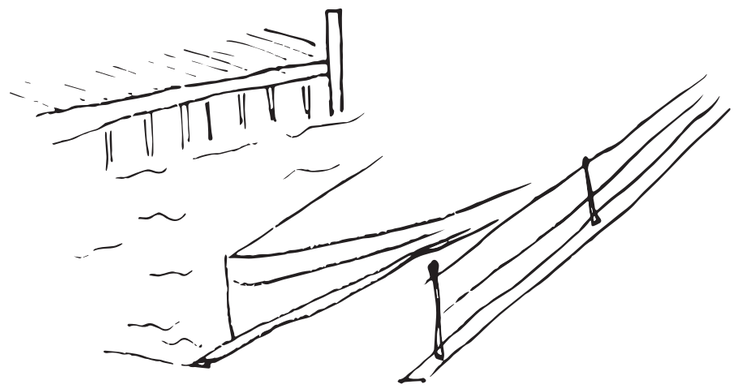


Figure 9: Openstreetmap, Amsterdam

Figure 10: Google maps Augustus 2021



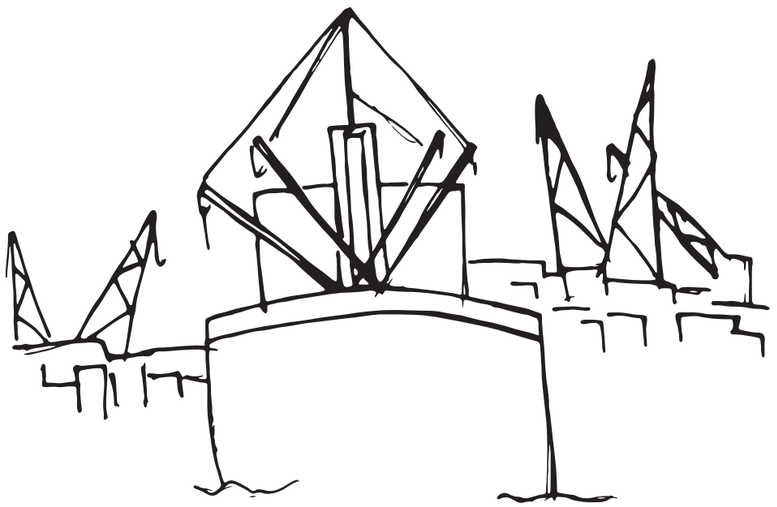
9. “Aarzelende Modernisering: Binnenvaart in de Negentiende Eeuw | NMGN - Nieuwe Maritieme Geschiedenis van Nederland”.

Figure 11: Marius de Jongere. De Maashaven. 1976

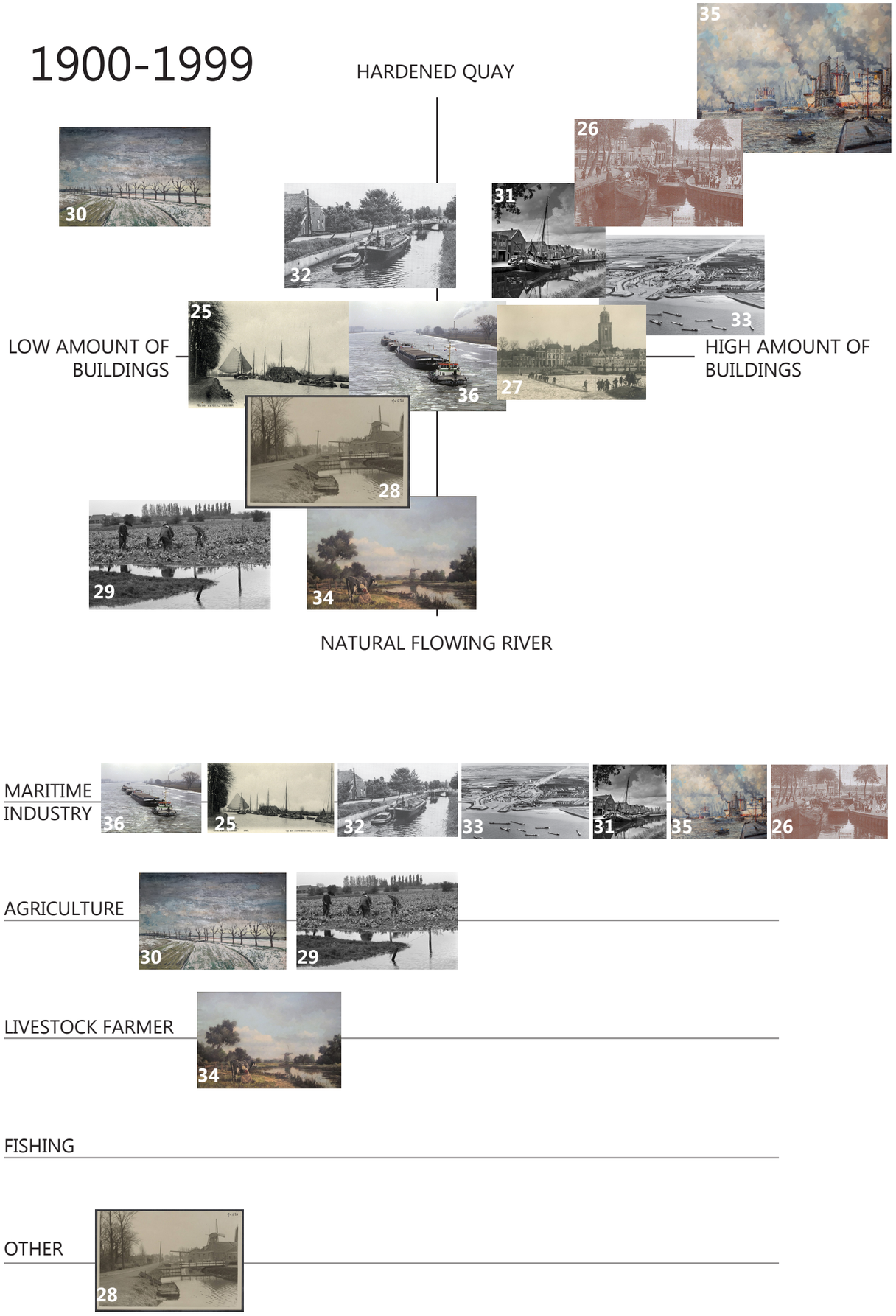
Figure 12: Maasvlakte 1976, Topotijdreis

ROTTERDAM HARBOUR 1976

This painting, dating from 1976, illustrates the large size of the harbour of Rotterdam. The depiction of the boats and installations serves to illustrate the large expansion that the maritime industry has undergone. The Maasvlakte, the location of the harbour, was entirely designed for a single purpose: the transportation of goods by boat[10]. This purpose is reflected in the linear quays and the numerous cranes. The painting juxtaposes the colossal container ships with more diminutive ships, even including a man rowing a small wooden boat. The presence of these smaller vessels amidst the larger ships contributes to an ambience that is somewhat eerie. The human scale appears to be lost in this depiction.



10. Ministerie van Onderwijs, Cultuur en Wetenschap, “De Eerste Maasvlakte”.



CHANGING RELATION

Utilising paintings and drawings offers a valuable source of insight into the Dutch relationship with waterways. However, it should be noted that such representations are not without their limitations. Firstly, there is a tendency to prioritise aesthetics over accuracy, with artistic conventions taking precedence over objective reality. Secondly, many works represent elite perspectives, thereby overlooking the experiences of the broader population. Additionally, stylistic choices and idealised depictions can serve to obscure actual environmental and infrastructural changes.

While individual paintings and drawings may possess inherent limitations, the collection of a large number of them can reveal patterns and common themes in the Dutch relationship with waterways. By analysing multiple artworks from different periods, recurring visual elements can be observed that reflect broader societal attitudes, technological advancements, and environmental changes. Even if some depictions are idealized or subjective, the collective body of images can help trace shifts in water management, trade, and daily life.

A close examination of the images collected reveals a striking trend: throughout history, property located in close proximity to waterways has not been considered a highly desirable location. Such areas were considered to be unsafe, unhygienic, and conducive primarily to commercial activities such as fishing and transportation[11].

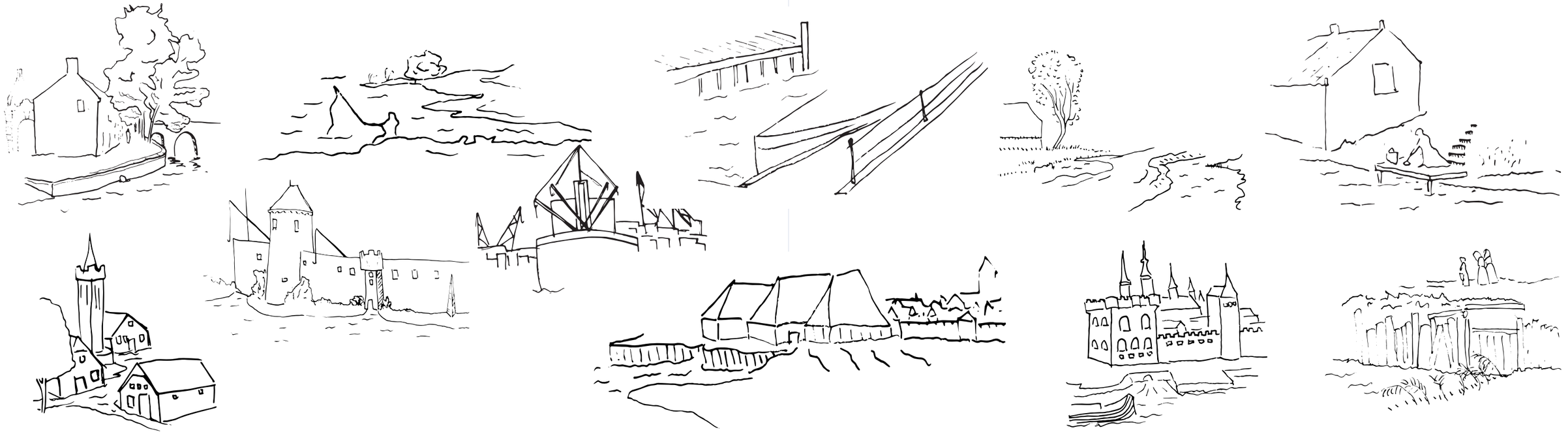
People of greater wealth and social standing tended to reside inland, seeking to avoid the perceived dangers of polluted and disease-prone waterfronts. In contrast, the less affluent often lived near the water, facing greater vulnerability. This socioeconomic divide is vividly depicted in historical art, such as the Zeeland paintings of darink mining, which illustrate the poor exposed to the elements near waterways while the wealthy were securely housed behind city walls (see appendix image no.3).

Despite the threats posed by water, it was an indispensable resource. It facilitated the transportation of goods by boat, served as a means for washing clothes, provided fish, enabled the movement of heavy logs, and irrigated fields for agriculture.

Even in early cities such as Gorichem in 1576 (see appendix image no.5) and Nijmegen in 1705 (see appendix image no.13), the trading industry was already of significant importance. Quays were specifically adapted to allow boats to dock more easily. Sailboats played a vital role in transporting goods, but as demand for transportation grew, they became impractical. The increasing traffic on canals made it impossible to rely solely on sail power. Over time, steam-powered ships became the new standard. In 1958, the last sail-powered cargo ship was sold, marking the end of an era (see appendix image no.31).

The transition to steam power brought larger vessels, prompting cities to expand or construct entirely new harbors to accommodate these massive ships. While cargo ships, whether sail- or engine-powered, have always been large, the scale of modern vessels and harbors has grown to such proportions that they are no longer accessible or public spaces. The harbor of Rotterdam, for example, exemplifies how the maritime industry has evolved into a closed, industrialized system, where the immense scale feels increasingly detached from human interaction.

11. Nichols, Blue Mind - The Surprising Science That Shows How Being Near, in, On, Or Under Water Can Make You Happier, Healthier, More Connected, And Better At What You Do, 2020.



THE APPEAL OF WATER

Throughout history, cultures have valued water-centric spaces, such as spas and baths, for their healing and restorative properties[12]. It has been hypothesized that environments comprising natural elements, including parks, forests, and beaches, offer a means of recuperation for individuals experiencing a state of heightened stimulation, a concept for explored by Wallace J. Nichols in his "blue mind" theory (2014) and by Stephen Kaplan in the Attention Restoration Theory (1989).

Of these natural environments, those comprising water, or "blue spaces," have been identified as holding a particularly strong appeal. The colour blue is frequently linked with feelings of calmness, focus and creativity, and is therefore conducive to feelings of openness and connection. While green spaces also have the capacity to provide a sense of rejuvenation, green is often linked to growth, renewal, and balance, evokes positive emotions, blue environments possess a distinctive emotional and psychological appeal[13].

It is noteworthy that the appeal of water extends beyond its visual characteristics. In the Netherlands, waters have a high sediment, often appearing green or brown[14]. The waters dynamic qualities, including light, motion, sound, and sensory effects can also create a profound sense of fascination and restoration. The soothing sounds, gentle reflections, and ever-changing patterns of water engage the senses in ways that have a calming effect on the mind and reduce stress[15].

WHAT HAPPENS WHEN PEOPLE ARE CLOSE TO WATER?

In today's fast-paced and overstimulated world, water serves as a refuge from stress and distractions, counteracting the "red mind"—a state of agitation and exhaustion[16].

Proximity to water has long drawn people for various reasons, but what specific effects does it have on individuals? Although extensive research has examined the human-nature connection, studies focusing explicitly on the influence of water, or "blue spaces," are comparatively scarce. Nonetheless, insights from these studies and broader research on natural environments provide compelling evidence of the psychological and physiological benefits of being near water.

The modern lifestyle, with its numerous distractions and relentless demands, frequently results in stress and attention fatigue. Kaplan's Attention Restoration Theory (ART) provides a conceptual framework for understanding the role of natural environments, including blue spaces, in facilitating mental recovery. ART is based on William James's concept of voluntary attention and emphasises the psychological advantages of environments that facilitate "directed attention," which is crucial for problem-solving and maintaining focus. Directed attention, while a vital cognitive function, is susceptible to fatigue, which can impair human effectiveness and increase the likelihood of errors[17]. Natural environments not only mitigate stress but also prevent it by enabling recovery from mental fatigue[18]. The restoration of directed attention necessitates the presence of restorative environments, such as natural settings, which must satisfy four essential criteria[19]; 1. Being Away: Restoration is supported by a sense of escape from routine. This does not necessarily require distant destinations; even nearby environments can evoke this sense of being away. 2.Fascination: Natural environments often feature patterns and qualities—such as moving clouds, rustling leaves, or flowing water—that hold attention effortlessly. This "soft fascination" provides mental respite while allowing space for reflection. 3. Extent: Environments with a sense of coherence and scope, whether vast wilderness areas or thoughtfully designed smaller spaces, can create a sense of immersion that aids mental restoration. 4. Compatibility: Natural settings are often perceived as more compatible with human inclinations, requiring less effort to navigate or engage with compared to urban environments[20].

The presence of blue and green spaces in an individual's living environment significantly contributes to overall well-being by encouraging physical activity and reducing stress. Psychoevolutionary theories, such as the biophilia hypothesis proposed by researchers like Grinde and Patil (2009), suggest that humans have an innate affinity for natural ecosystems. This deep-seated connection explains why the absence of nature in daily life is linked to heightened stress and why natural environments foster recovery through effortless and spontaneous engagement[21].

Blue spaces hold a unique appeal for physical activity and social interaction and mental wellbeing. Activities such as swimming, rowing, and fishing, as well as walking, running, and biking along water, are common uses of these spaces. Rivers and other water features also motivate physical movement and exploration, enhancing both health and community interaction[22]. A 2011 study, Mappiness, conducted by George Mackerron and Susan Mourato, revealed that people generally feel happier when spending time outdoors in nature compared to urban environments. Additionally, being near water increased a person's happiness levels by 5.2%. What aspects of nature brought happiness to the respondents? Their answers highlighted the immersive qualities of the experience: the soothing sounds of water, wind, birds, or even silence; the distinct scents of earth, water, plants, fresh air, or seaweed; the calming yet dynamic visuals of shades of green, blue, red, yellow, and orange, or the movement of leaves and water stirred by the wind, along with glimpses of animals or fish. Respondents also

12. Foley en Kistemann, "Blue Space Geographies: Enabling Health in Place", 1 augustus 2015.

13. Nichols, Blue Mind - The Surprising Science That Shows How Being Near, in, On, Or Under Water Can Make You Happier, Healthier, More Connected, And Better At What You Do, 2020.

14. Blaas, "Waarom Is de Noordzee Bruin?"

15. Foley en Kistemann, "Blue Space Geographies: Enabling Health in Place", 1 augustus 2015.

16. Nichols, Blue Mind - The Surprising Science That Shows How Being Near, in, On, Or Under Water Can Make You Happier, Healthier, More Connected, And Better At What You Do, 2020.

17. Kaplan, "The Restorative Benefits Of Nature: Toward An Integrative Framework".

18. Calogiuri en Chroni, "The Impact of the Natural Environment on the Promotion of Active Living: An Integrative Systematic Review".

19. Kaplan, "The Restorative Benefits Of Nature: Toward An Integrative Framework".

20. Ibid

21. Grinde en Grindal Patil, "'Biophilia: Does Visual Contact With Nature Impact on Health and Well-Being?'"

22. Calogiuri en Chroni, "The Impact of the Natural Environment on the Promotion of Active Living: An Integrative Systematic Review".

mentioned the tactile sensations, such as the coolness of water against their hands or feet, the firm yet yielding feel of earth or fallen leaves underfoot, and the heightened focus required to navigate over rocks, branches, puddles, or shells[23].

These theories on the effects of blue and green spaces are align with the concept of "Blue Mind," as proposed by Wallace J. Nichols. Nichols states that individuals residing in urban environments frequently exhibit a phenomenon he terms the "red mind." The "red mind" is associated with stress, loud noises, anxiety, fear, and potentially anger and despair. In order to restore this red mind, it is necessary to achieve a blue mind, as stated by Nichols. One can achieve this by engaging in focused time in nature, which activates other parts of the brain, thereby providing a respite for the fatigued frontal lobe. Being in proximity to water can calm an overactive mind while simultaneously stimulating the senses. This is achieved by accessing ancient neural maps and their associated neurochemical reactions. Blue mind helps to eliminate the anxious complexity and distraction associated with a red mind world[24].

10 SPATIAL ASPECTS

In conclusion, blue and green spaces provide crucial opportunities for stress relief, mental restoration, and physical activity, making them essential components of urban and rural environments alike. Several theories explain the deep connection between humans and water, each offering unique insights into its psychological and physiological benefits.

The Blue Mind theory emphasizes water's role in reducing stress and promoting relaxation, contrasting the "red mind" state of modern overstimulation. It highlights how proximity to water fosters calmness, creativity, and emotional balance.

Kaplan's Attention Restoration Theory (ART) explains green restorative effects through "soft fascination," where the dynamic yet effortless qualities of natural environments help recover directed attention, mitigate fatigue, and improve focus.

The Psychoevolutionary Theory and Biophilic Hypothesis highlight humanity's innate connection to nature. While the former links natural settings to stress recovery, the latter emphasizes our inherent affinity for nature, including water, which nurtures well-being. Together, they underscore water's vital role in promoting health and happiness.

Based on these diverse theories and perspectives, ten spatial aspects have been identified. These aspects serve as a guiding framework for the design/redesign of buildings and sites. Key spatial aspects include:

23. Nichols, Blue Mind - The Surprising Science That Shows How Being Near, in, On, Or Under Water Can Make You Happier, Healthier, More Connected, And Better At What You Do, 2020.

24. Ibid

1. Openness and Scale

- Green Spaces: Large open areas, such as large parks, provide a sense of freedom and reduce feelings of confinement. Similarly, smaller green spaces with paths and natural vegetation can create an illusion of greater scale, fostering a sense of escape and immersion.
- Blue Spaces: The vast expanses of water found in lakes, rivers, and seas often offer expansive, uninterrupted views that provide a sense of tranquillity and vastness, which contrasts with the dense and often chaotic nature of urban environments.

2. Natural Patterns and Textures

- Green Spaces: Features such as the growth of trees, the soft texture of grass or the play of light through leaves create a 'soft fascination' that captures attention without overstimulation. This quality allows the mind to rest and recuperate.
- Blue Spaces: The dynamic patterns of water - ripples, waves or reflections - are visually appealing but do not require focused attention. These patterns create a soothing visual rhythm that promotes relaxation.

3. Accessibility and Proximity

- Green and blue spaces that are easy to access encourage frequent use, which enhances their stress-relieving benefits. Nearby parks, gardens, and waterfronts provide opportunities for short but meaningful breaks from daily routines.
- Proximity to these environments is particularly significant in urban settings, where natural spaces serve as sanctuaries amidst busy surroundings.

4. Boundaries and Transitions

- Green Spaces: Transitions between natural and built environments (e.g., tree-lined streets or green corridors) create a buffer that reduces sensory overload. The presence of shaded areas and clear pathways enhances the usability of the space, encouraging exploration and movement.
- Blue Spaces: Edges of water bodies, such as riverbanks, beaches, or boardwalks, provide a natural interface for human interaction.

5. Soundscapes

- Green Spaces: Natural sounds, like rustling leaves, birds, or the wind, have been shown to reduce stress and anxiety by masking urban noise and creating a tranquil auditory environment.
- Blue Spaces: The gentle sounds of water—waves lapping, streams flowing, or rain falling—are rhythmic and calming, promoting relaxation and reducing stress.

6. Light and Reflections

- Blue Spaces: The play of light on water surfaces, including reflections and sparkles can have a profound calming effect.

7. Pathways and Navigability

- Blue Spaces: Waterfront trails or boardwalks invite people to stroll or engage in physical activity. Proximity to water combined with clear navigational paths enhances the restorative experience

8. Visual Contrast and Color

- Green Spaces: The dominant presence of green, associated with growth and renewal, creates a sense of calm and stability.
- Blue Spaces: The shimmering and changing shades of the water make it particularly striking and attractive, creating a sense of tranquillity and depth.

9. Social and Solitary Zones

- Both green and blue spaces often include areas designed for social interaction (e.g., picnic spots, waterfront cafes) and solitude (e.g., secluded benches, quiet paths). These options cater to different needs, allowing individuals to connect with others or reflect privately, both of which are beneficial for stress reduction.

10. Multi-Sensory Engagement

- Both environments provide a multi-sensory experience, combining sight, sound, smell, and touch. For example, the feel of grass underfoot or sand between toes, the scent of flowers or salty sea air, and the sounds of nature create immersive experiences that counteract the sensory overload of urban life.

The spatial characteristics of green and blue environments work synergistically to create restorative spaces. These environments reduce stress by providing opportunities for mental recovery, physical activity, and social connection. By integrating these spatial aspects into urban planning and landscape design, cities can enhance public well-being and resilience against the pressures of modern life.

INTEGRATING HISTORY AND 10 SPATIAL ASPECTS

As mentioned in the introduction, the Delta Shipyard serves as a compelling example of maritime heritage and the deep connection people once had with the water. The shipyard area consists of two main structures: the old shipyard and a water tower.

T'zaagje serves as a striking example of the repercussions of the expanding maritime industry. The delta shipyard, found itself unable to meet the mounting demand, ultimately leading to its bankruptcy. The area subsequently experienced a decline, with the infrastructure and buildings undergoing a process of deterioration.

To transform this area and the old shipyard, it is essential to first evaluate the historical relationship between people and T'Zaagje, as well as how the area itself has evolved over time. This evaluation will provide the foundation for a value assessment of the area. Based on these insights, a new plan can be developed for T'Zaagje and its buildings, ensuring that the area's significance is preserved while incorporating the ten key spatial aspects of designing with water.

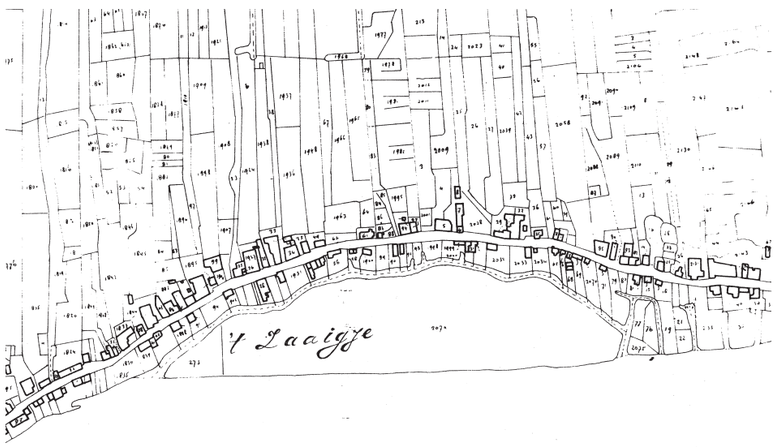


Figure 13: Kadastrale kaart Sliedrecht, 1825-1830

Figure 14: Photo Delta Shipyard, 2024, Photo by Eva van der Cammen

To evaluate a location, old maps, drawings, and photos can be utilized. When exploring the history of this shipyard and its location, the earliest recorded mention of the name T'Zaagje dates back to the Napoleonic era, appearing on the first cadastral map created in 1825. The name was likely derived from the area's historical function, possibly as a timber workshop or sawmill.

Over the years, T'Zaagje has undergone significant changes, with new buildings being constructed and alterations to the land itself. These alterations are most visible in old photos collected from archives and the Historische Vereniging Sliedrecht and satellite images collected from Topotijdreis.nl and google maps.

In the current state, the various time layers of T'Zaagje are most evident in the land itself and the remnants of the various constructions. The quay of T'Zaagje exhibits three distinct identities. On the western side, a natural waterside features a gradual transition between land and water, representing the area's likely pre-human intervention appearance. In the middle, an industrial quay marks the landscape with its hard, structured edge. The eastern section, meanwhile, exhibits a blend the natural waterside and the industrial.

From the evaluation of the T'Zaagje and the buildings located on this site, a value assessment can be conducted (see appendix for the value assessment). After the value assessment, the design phase begins, with the ten spatial aspects playing a crucial role.

By integrating these aspects, restorative spaces can be created at both the landscape and building scale. Their interpretation allows for flexible application, ensuring a harmonious balance between nature and human use.

Figure 15: Drawing Delta Shipyard, 1950s, Historische vereniging Sliedrecht

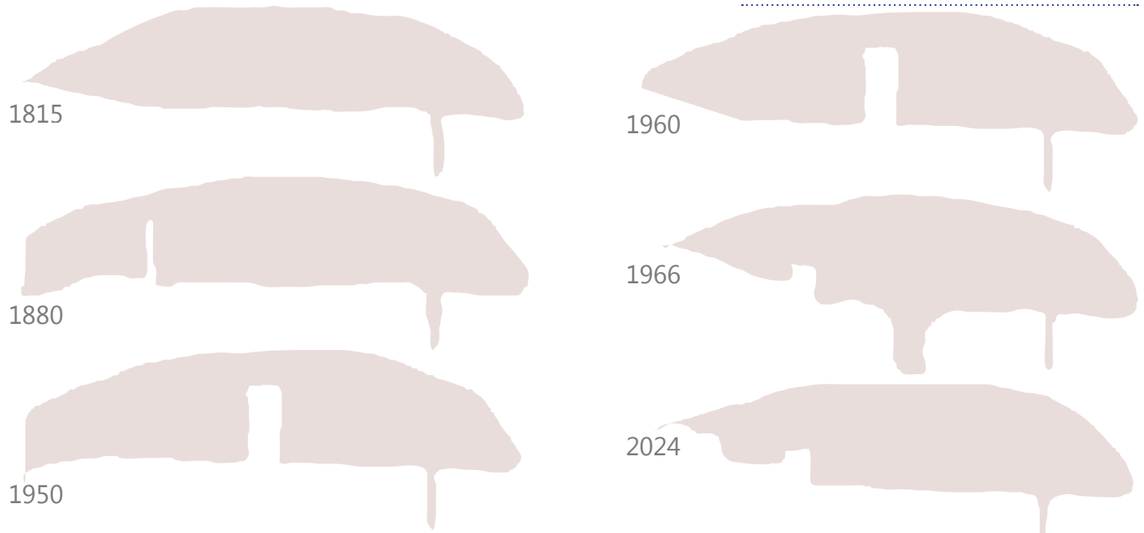


Figure 16: Changing shape T'Zaagje, Illustration by Eva van der Cammen

Figure 17: Different quays T'Zaagje, drawing by Eva van der Cammen

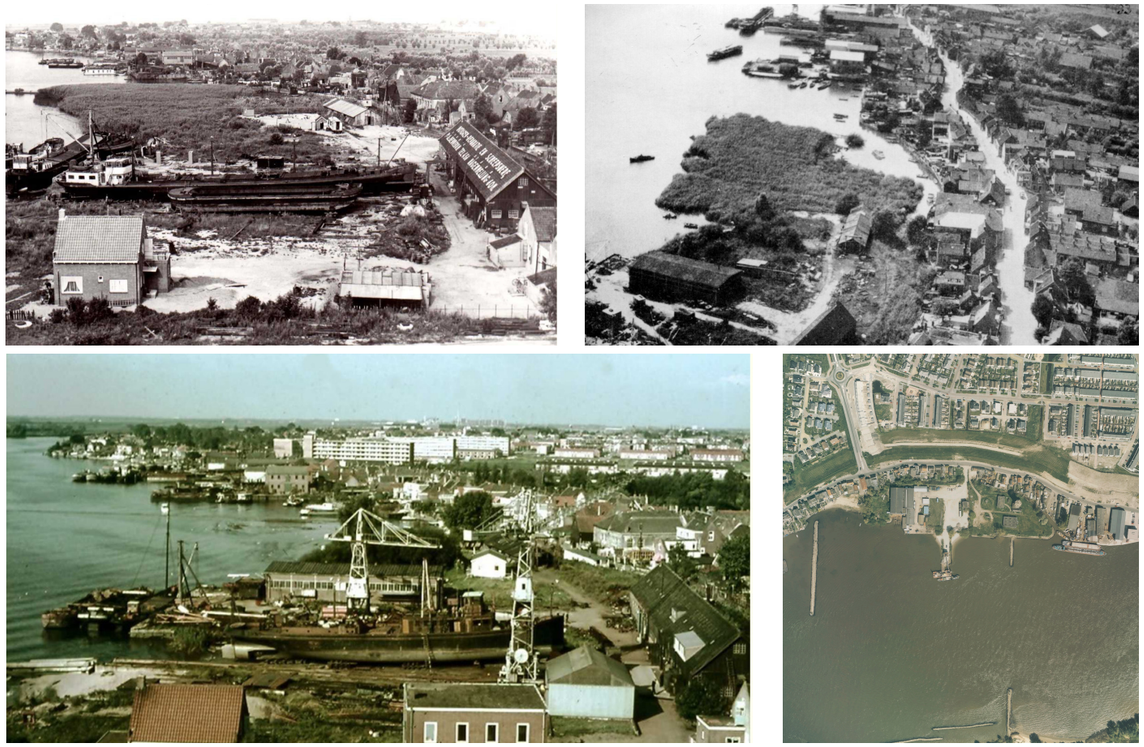


Figure 18: Photos Van Bennenkum and Delta shipyard, 1950-1980, Historische vereniging Sliedrecht

For the landscape, several aspects are particularly relevant to T'Zaagje. These include establishing straight sight lines to the waterfront, enhancing water visibility, creating large open spaces, and providing both solitary zones and gathering places. Biodiversity is also essential, not only for helping insects and animals life but also for enriching the environment with varied textures, soundscape, and providing soft fascinations.

Additionally, designing a buffer zone between the houses on the dike and the new public area is necessary to reduce sensory overload, ensuring a more comfortable and restorative experience for residents and visitors alike.

The integration of the 10 spatial aspects at the building scale can be applied in various ways. By incorporating openness, natural patterns and materials, and social flexibility, buildings can foster well-being and strengthen the connection to nature.

Openness and Scale and *Light and Reflection* play a crucial role in creating a sense of freedom within a building. Large windows, atriums, and open floor plans enhance spatial perception, while reflective surfaces, such as glossy tiles, or polished stone replicate the shimmering effect of water, which can enhance soft fascinations.

Natural Patterns and Textures and *Visual Contrast and Color* provide visual and tactile senses. Materials like wood, stone, and natural fibers contribute to a calming atmosphere, while dynamic light and shadow effects from skylights or perforated facades mimic natural light play.

Boundaries and Transitions create a gradual shift between built and natural environments. Softened edges, such as terraces, balconies, and green buffers allow for a more seamless

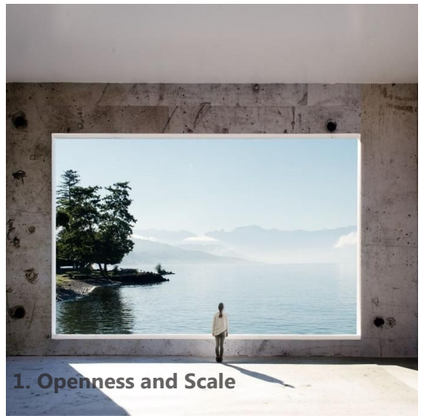


Figure 19: Collage by Ilka Kramer

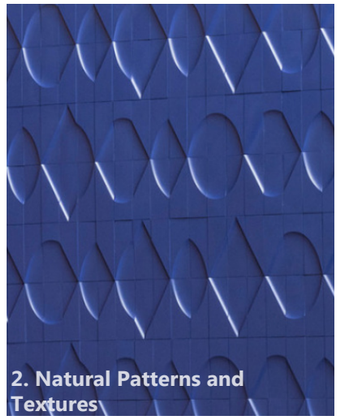


Figure 20: Tile designed by Kaza https://www.kaza.com/designs/delej

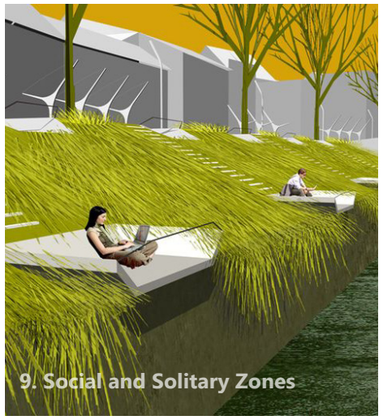


Figure 21: Petkova ek river bank, ljubljana, Slovenia, 2008, BB Architects

experience, blending indoor and outdoor spaces while reducing sensory overload.

Social and Solitary Zones focus on the different user needs by balancing spaces for interaction and retreat. Open common areas, such as communal spaces and shared terraces, encourage social engagement, while quiet nooks, partitioned seating areas, and secluded balconies provide moments of solitude, ensuring a well-rounded and adaptable environment.

While integrating all 10 spatial aspects can enhance a building, the function of a building plays a role in determining how suitable this integration is. If the new function were a spa, for example, incorporating elements like water reflections, soft natural textures, and immersive sensory experiences would align seamlessly with the building's purpose of relaxation and restoration. However, since the new function is a makerspace in an old shipyard, the possibilities are more restricted.

A makerspace prioritizes functionality, durability, and practicality over pure sensory or restorative qualities. Natural textures and soft materials, while beneficial for comfort, might not be suitable for an industrial environment requiring sturdy, easy-to-clean surfaces. Soundscapes, a crucial aspect in calming environments, are harder to control in a space where tools and machinery generate noise. However, some aspects can still be adapted, such as openness and scale, but also the use of natural light, visual contrast, and social/solitary zoning can enhance the space without compromising its industrial function.

Ultimately, while the full integration of all spatial aspects may not be practical, selective application can still create a balanced and stimulating environment within the constraints of a makerspace.

Figure 22: Louvre Abu Dhabi by architect Jean Nouvel

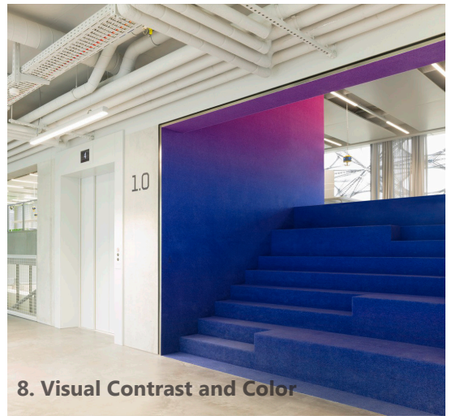


Figure 23: Research Center, Reutlingen, Germany, Brigida González

Figure 24: Leeuwesteyn, Utrecht, Delva landscape

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Description paintings

The painting depicts the Sint-Elisabeth flood of 1421. The Sint-Elisabeth flood was considered one of the most destructive floods of its time. The repeated occurrence of flooding in this region led to challenges in agricultural practices, as the salt content in the soil significantly impacted farming activities. This situation ultimately led to the abandonment of numerous farms in the region[24].
The painting depicts a series of small towns, with water depicted as flowing around them. The curches are of a similar style, and there are two-storey floor houses. However, as this painting is an interpretation of the flood, it does not offer a precise spatial representation of the time period in question. Furthermore, it is evident that there is minimal protection against the water.

The painting depicts the city of Breda. It is the oldest historically accurate cityscape of the Netherlands. The painting is believed to have originated between 1518 and 1520[25].
The city is encircled by a defensive wall, which delineates the urban area from the surrounding natural environment. The city is accessible via the main entrance. Furthermore, the wall is equipped with multiple towers and windows, affording observers a view of the surrounding area. Additionally, the painting depicts two structures that extend beyond the wall's perimeter. It seems reasonable to posit that these were used to transfer of goods from vessels moored at the water's edge to the city's interior.

The illustration depicts the city of Gorinchem in 1576[26] encased within fortifications, with a river and seven sailboat. Additionally, a wooden fence and a tollgate in the water are depicted, which were presumably employed to impede the ingress of boats into the city. The illustration also depicts two distinct types of transitions between land and water. In the area of the city designated for the mooring of vessels, a hard line is evident. The waterside has been designed to be accessible for boats, which represents the primary rationale for this design. On the opposite side of the city, the transition into the water is more gradual. This is the more natural waterside where a man is engaged in the act of fishing.

24. “Hoog Water: Oorzaken en Gevolgen van de Sint-Elisabethsvloed”.
25. “DPG Media Privacy Gate”, z.d.
26. “Geschiedenis Gorinchem”.


11

The painting was created circa 1668 by Jacob Isaacksz. The subject of the work is a windmill in Wijk van Duurstede.
The flour mill held a monopoly over the milling of grain in the municipality of Wijk bij Duurstede. It was Talso, one of the oldest stone rack mills[27]. This fact may provide a rationale for the selection of the mill as a subject in the painting. In addition to its function as an essential economic entity for the town, a mill is often regarded as a romantic symbol. It is suspected that, in this instance, the artist may have romanticised the reality to a certain degree.
In this instance, an attempt has been made to fortify the quay by the use of logs. However, in this location, the river continues to follow its natural course. The river's meandering course is evident, and in certain locations, the enhancement of the quay has resulted in the river's deposition of sand, thereby facilitating the growth of flora.


16

The painting was made by Bart van Hove in 1840. The painting probably shows the city of Delft, recognizable by the tower on the left. This tower is the tower of the town hall.
An examination of the canal and the adjoining quay reveals a number of notable contrasts. On the left side, there is a proximate relationship with the water. A slope leads into the water, and the quay by the houses is relatively low and narrow. Additionally, a row of trees is situated on this quay.
On the left side, there are two levels. The houses are positioned at a considerable height in comparison to the other side of the canal. Additionally, a wall has been constructed to prevent people from falling down. The lower level is situated in close proximity to the water, where individuals can moor their vessels. This area is likely to experience flooding from time to time, and it can only be accessed via stairs.

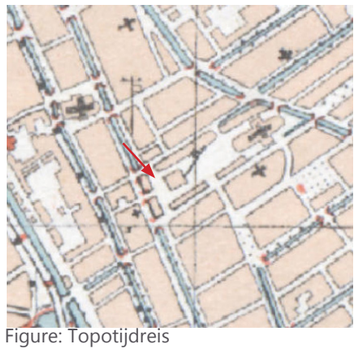


Figure: Topotijdreis


Figure: Google maps, streetview

27. “Binnen Korenmolen / Molen van Ruisdael te Wijk Bij Duurstede”.


18

The provenance of this painting is uncertain. It is thought to have been created by Charles Leickert around 1855.
The painting depicts a narrow river with a natural border. The land gradually gives way to the water, with a few modifications having been made to the sides of the waterway. A small wooden structure is situated on the right side of the painting, providing visitors with the opportunity to gain closer proximity to the water. On the left side, a number of tree trunks are depicted floating in the water. In the distance, boats can be observed. The painting effectively illustrates the manner in which the water was utilised by the people depicted. The waterway was utilised for a variety of purposes, including the cleansing of cloths and the conveyance of substantial materials such as trees. Additionally, the presence of boats facilitated the transportation of other materials.


23

This image, dating to the 1890s, originates from Marken in the Kerkenbuurt, an island located within IJsselmeer. The distinctive architectural style of Marken is characterised by its terp settlements, where all dwellings are constructed on elevated land to provide protection against the water. The image reveals a variety of levels, with the house on the left situated at the highest point and the quay supported by wooden planks. The image also highlights the historical significance of Marken as a fishing village, a role that subsequently diminished following the construction of the Afsluitdijk in 1932, which rendered fishing less viable[28].


25

This photograph depicts the Merwede channel with numerous vessels on the water. Due to the substantial number of boats, only the sailboat with the wind from behind was able to successfully navigate the channel; the rest require towing. This image serves as a noteworthy illustration of how the industry expanded, but also of how, in certain locations, the conventional methods of transporting goods had become impractical.


31

The photograph shows the sailboat Goede Verwachting (Good Expectation). In 1956, this vessel represented the final ship to be used for the transport of goods without an engine. Five years later, the family that owned the Goede Verwachting purchased a new vessel equipped with an engine[29]. This development signified the conclusion of an era, marking the transition from a vessel relying solely on wind power to one propelled by an engine.

28. Ginkel-Meester e.a., Monumenten in Nederland. Noord-Holland.

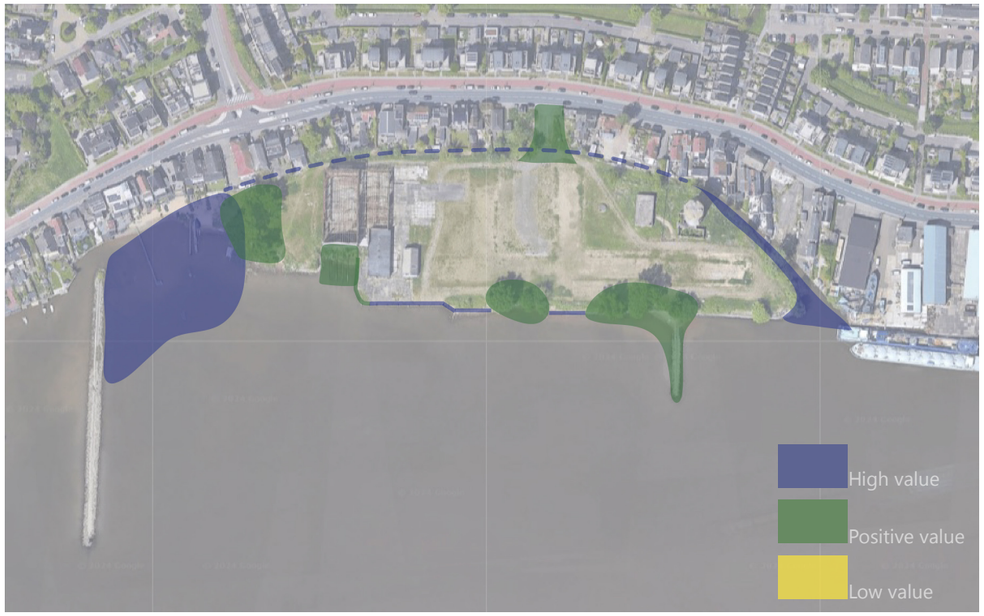
29. “Schaalvergroting en Maatschappelijke Integratie: Binnenvaart in de Twintigste Eeuw | NMGN - Nieuwe Maritieme Geschiedenis van Nederland”.

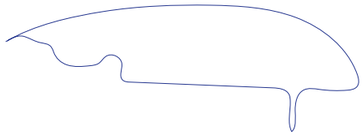
Value assesment T'Zaagje

The conclusion draws upon three key theoretical frameworks to assess the value of T' Zaagje. The Richtlijnen Bouwhistorisch Onderzoek 2009 provided a contextual value framework, emphasizing the historical and architectural analysis of the shipyard and water tower against criteria such as preservation and rarity. The first value matrix, outlined in Designing from Heritage by Marieke Kuipers and Wessel de Jonge, facilitated a holistic assessment of the site, integrating contextual, architectural, and environmental perspectives to uncover nuanced historical elements. The second value matrix, developed by Pereira Roders and colleagues, enabled the identification of secondary values—such as age, social, and historical importance—highlighting the potential for adaptive reuse to reinforce community connections and preserve heritage. Together, these frameworks informed a comprehensive evaluation, balancing tangible and intangible values.

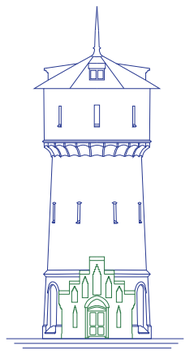
In conclusion, the T' Zaagje area, consisting of the water tower and the shipyard, presents a complex interplay of historical, social, and architectural values despite the deteriorated state of its structures. The shipyard, while holding some user and intangible value due to its historical association with Sliedrecht's maritime industry and unique floodplain context, does not meet high preservation or rarity standards and is in a state of severe decay. Conversely, the water tower demonstrates notable general historical, user, and ensemble values, reflecting its significance in Sliedrecht's development and townscape. However, its condition and modest architectural features limit its contextual significance.

The broader site analysis highlights the intangible value of T' Zaagje's relatively undisturbed floodplain and its potential for community engagement, particularly in restoring features like the removed stream. Utilizing frameworks like the value matrix and methodologies for heritage conversion underscores the potential to enhance the historical and social value of the area through adaptive reuse and thoughtful preservation efforts. Introducing new functions could breathe life into these structures, fostering stronger community attachment and ensuring their relevance for future generations.

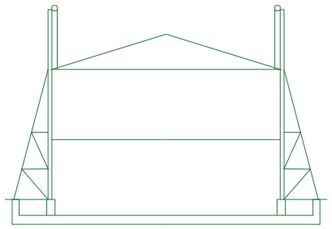




Tangible & Intangible value



Tangible & Intangible value



Intangible value

Delta shipyard-Layers-Brand

Site

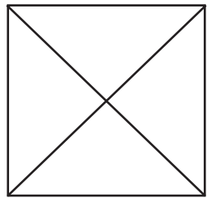
Skin

Structure

Services

Space plan

Stuff

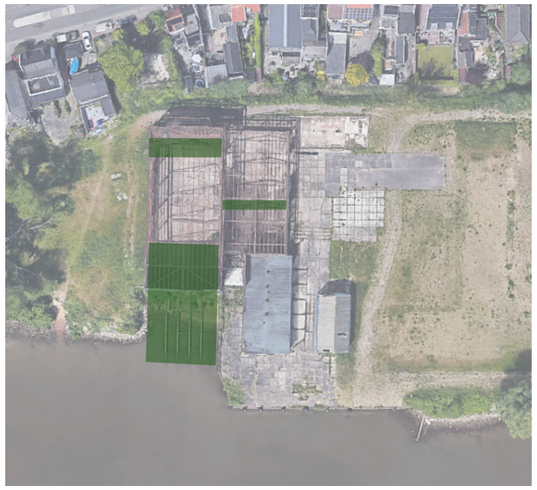


Site

Skin

Structure

Services



Space plan

Stuff