The general characteristics of **maritime heritage**

in relation to the adaptive reuse process

Max de Veth - Research Paper - Revitalising Heritage

Coverimage:
Picture taken in the former Mercon Kloos Halls, visible tracks running from indoor to an outdoor balcony. Making it possible to bring in large steel parts from the river into the buildings for further assembly. Or bringing finished parts out for transport over the water. In this way it is showing the former relation of the structures with the waterfront, making it an important value for the maritime heritage character of the site.

Source: the author

Figure 1: Image to show the former relation to the waterfront
Source: the author

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Figure 2: Old image of the Kloos wharf around 1920.
Source: Het Contact: 125 Years of Kloos

1.

Introduction

With 423 active shipyards around 1900, the maritime industry sector was once the biggest industry in the Netherlands. The use of waterways for transportation of products was one of the main reasons why there were a lot of industrial sites placed on the waterfront of Dutch rivers. (DBNL, 2003). But due to technical innovations, economical changes and further globalisation, the Netherlands became less attractive for companies active in this sector. This is one of the reasons why there is a significant number of vacant industrial sites on Dutch waterfronts. (Jevremovic & Vasic, 2012)

A high concentration of these maritime industrial sites can be found within the area referred to as the Waterdriehoek. The Waterdriehoek covers the area of the Biesbosch, UNESCO world heritage site of Kinderdijk and the Dutch 'Drechtsteden'. (Dutch Cultural Heritage Agency, 2023) These sites were mostly placed in this region of the Netherlands because the waterways were wider here than in other parts. (DBNL, 2003)

The connection with water, and the historical usage and treatment of these sites and structures, is integral to the national history and identity. (Dutch Cultural Heritage Agency, 2023) For this reason their impact on the Dutch landscape and direct surroundings is an important factor in preserving the national history. (Hettema & Egberts, 2020)
Some of these former maritime industrial sites have been redeveloped and turned into areas with a different function or they have been demolished. But as stated by Hettema and Egberts, these sites should be looked at with more attention. We should ensure to make these sites part of the future identity narratives and this can best be done by adapting and reusing these sites and structures. (Hettema & Egberts, 2020) This is also stated by Theodora Chatzi Rodopoulou, who says that the impact of maritime companies on the built environment of the Netherlands is significant for the national history. (Rodopoulou, 2018)
This process of finding a new function and adapting these structures to their new function, is called adaptive reuse.

With adaptive reuse it is the goal to preserve the importance of a building for a place or community while guaranteeing its continued usefulness. (ICOMOS, 2013) This approach is now also often the starting point for redevelopment projects in (maritime) industry sites in the Netherlands. It ensures that the social impact on the surroundings of a heritage site is also taken into consideration. In most of the projects which have been realised in the Netherlands since the 90s you can see an improvement on this aspect of adaptive reuse. (Rodopoulou, 2018)

But according to Rodopoulou there is still too little attention and consideration for the cultural value and characteristics of these buildings, in the execution of these adaptive reuse projects. Important questions pertaining to the historical context of these structures stay unanswered. Questions about the nature of the products that were once manufactured by the companies that operated and built these structures before. But also questions about the purposeful design and layout of these maritime structures pose intriguing queries: Why is the space configured in this particular manner, and why is the facade built up like this? Regrettably these inquiries often stay unanswered in the process of adaptive reuse. (Rodopoulou, 2018)

This research focuses on the characteristics of maritime heritage, and examine an adaptive reuse case study in the Netherlands. The aim is to enhance the Dutch approach by better incorporating the original features of maritime heritage into the adaptive reuse process. By formulating a framework for the relation between original characteristics and the future use of these buildings, this research will help make design decisions that ensure sustainable use while maintaining the original characteristics and cultural values of the maritime heritage sites.

2.

Problem statement & Research questions

2.1 Problem statement

The problem statement follows on several findings in the evaluation of adaptive reuse projects, performed by Rodopoulou. In general we can state there is insufficient attention given to the cultural value and characteristics of abandoned maritime- and industrial sites in the Netherlands during the adaptive reuse process. This leads to a lack of understanding of their historical context and meaning. (Rodopoulou, 2018)

2.2 Research questions

Taking the lack of attention for the cultural value and the characteristics of these structures into account, this research aims to create more knowledge on these characteristics and possible ways to integrate them into the adaptive reuse process. With this research an answer is formulated to the following research question:

What programatic functions are best fit for maritime heritage structures, taking their heritage characteristics into account?

To formulate an answer to this main question, the research is split into three parts. Each part will address one sub question and for each part, specific research methods are used. The questions which are addressed, are the following:

1. What are the general physical characteristics of maritime heritage and what is their value?

2. What is the adaptive reuse process and in what way has this been executed in the past?

3. To what extent do adaptive reuse projects consider the original structure's characteristics when defining the new program?

3.

Frame of reference and method

The motivation for this research can be found in the extensive analysis of Rodopoulou, performed on the transformation on industrial- and maritime heritage sites. In her conclusions it is stated that the weak link in the Dutch approach on revitalising industrial heritage (in this research focused on maritime heritage sites) is the translation of the original and defining characteristics of the heritage in the redesign of these structures. (Rodopoulou, 2018) For example as shown in figure 3 where the original openess of the halls is blocked by the hanging art works.

Figure 3: Image of the NDSM lasloods Amsterdam, after the realization of the adaptive reuse project.
Source: Jeroen Henning // studioPXL, 2020

3.1 Literature research and casestudies

To develop a good overview of the general characteristics of maritime heritage, a literature research is performed. This research consists of several literature studies which looked into the characteristics of maritime heritage throughout Europe, with a focus on the Netherlands. The outcome of this literature study answers part of the first research sub question, namely what the general characteristics of maritime heritage are. This information is later used in the value assessment, which will be discussed in the next paragraph.

The process of adaptive reuse of heritage sites was researched based on literature and definitions set out by ICOMOS. The process of adaptive reuse in The Netherlands is broadly discussed in the work of Rodopoulou. The findings of this research study were further researched by analysing the casestudy of the NDSM wharf in Amsterdam.

3.2 The value assessment framework

The framework of Pereira Roders as described in "Re-architecture: lifespan rehabilitation of built heritage" (Fig. 4) was used to analyse and categorize the different characteristics and their values of the Mercon Kloos site. The combination of the value framework of Pereira Roders and the layer framework of Stewart Brand have resulted in the value assessment matrix, used in this research. This matrix (appendix I) lays out the different layers of the Kloos structures and evaluates the different values of each layer. In this way the matrix provides an overview of the characteristics and their values and is used in combination with the literature from paragraph 4.1 to formulate an answer to the first research sub question.

Figure 4: The Values Framework
Source: Ana Pereira Roders, 2007

3.3 A combination of theory and practice

By combining both the theory about general characteristics of maritime heritage with the practice of a case study (MerconKloos), the theoretical approach can be tested and lessons taken from that for the future development. The same goes for the combination between the theory about the process of adaptive reuse and the practical realisation of it in a case study (NDSM). By combining both theoretical fields to a case study, the research gives insight into ways to improve the incorporation of general characteristics into the adaptive reuse process. This interaction between theory and practice and the build-up of the research is shown in figure 5 .
The two case studies were both chosen based on the following properties:

1. The project is related to the topic of the maritime industry
2. The project is situated in The Netherlands
3. The original structure has been used in the process of adaptation for reuse.
4. The structures show similarities with the general characteristics found in the literature research.

Research diagram

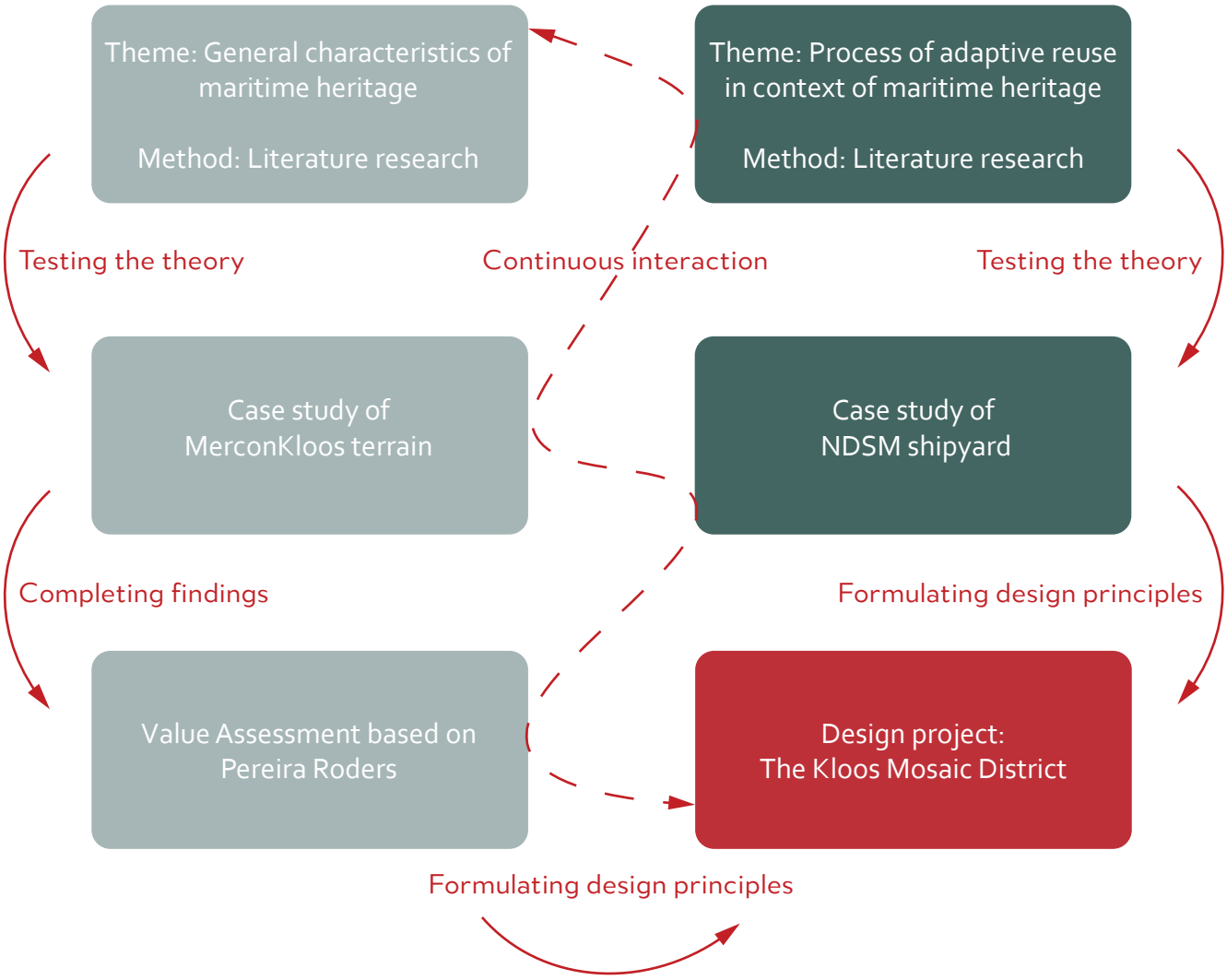

Figure 5: Research diagram
Source: The author, 2024

4.

The general characteristics of maritime heritage

Although maritime structures were built in different periods and different places, there is still a lot of similarity between these structures. This is mostly thanks to the fact that these structures were all built with the same central themes and demands. The two leading themes for these structures were safety and efficiency. (*Jevremovic & Vasic, 2012)*
From the literature research it shows that the impact of these leading themes is so significant, that the maritime structures built throughout Europe have strong similarities. *(Jevremovic & Vasic, 2012)*
Therefore the scope of the literature research into finding the general characteristics of maritime heritage is taken broader than the Waterdriehoek area. The general characteristics found in the literature research, are used to determine the characteristics to be evaluated in the MerconKloos case study.

Figure 6: Birdeye view of MerconKloos terrain in 2018
Source: www.geschiedenisvanzuidholland.nl

4.1 The general characteristics of maritime heritage

The first example of maritime heritage structures date back to 1700 and already show a lot of the basic principles still present in the examples of today. These mill buildings were designed and built with the principles of efficiency and safety, to create the most useful interior spaces in a low-cost manner. (*Jevremovic & Vadic, 2012)* An example of such a mill building is shown in figure 7.

For fire safety reasons a lot of the maritime industrial structures were built with as least obstructions as possible. This is the main reason why the interior walls are free of any wall coverings or decorations. Leaving the building services and construction completely visible. Furthermore the use of flat roofs, large window openings and partition-free interiors would be beneficial to extinguish any fires that could occure in these structures. (*Jevremovic & Vadic, 2012)*

Figure 7: Massachusetts' Waltham Mills Buildings
Source: Jevremovic & Vadic, 2012

A lot of the characteristics named above are based on an analysis of several mill buildings around Europe. But these characteristics are visible in a lot of the later maritime structures, due to the fact that these structures were still built with the same principles of safety and efficiency. (*Hettema & Egberts, 2020)*

One of the most influential developments in the construction of industrial buildings, was the introduction of steel. This made it possible to make larger spans and even bigger unobstructed spaces. Therefore multiple story buildings were no longer needed and also seen as less efficient. The maritime structures consisted of a single story, large and open space. The large spans were created with high and lightweight steel trusses to support the lightweight concrete roof panels. A heavier construction was added to be able to place cranes with a loadcapacity of several tons. (*Hettema & Egberts, 2020)*

Also in most Dutch examples of maritime structures the combination of brick façades and visible steel construction is common. (*Rodopoulou, 2018)*

The construction is not the only characteristic that is clearly based on the goal to create a manufacturing structure as efficient as possible. This can also be seen in the aim to let as much daylight come into the structure as possible. By doing so the manufacturing process could be executed mostly without artificial light and for the longest time possible. This aim resulted in the implementation of large, tall window openings in the façade and the use of pyramid shaped skylights in most of the maritime structures in the Netherlands. As is also visible in the different structures of the NDSM wharf in Amsterdam. (*Andrade, Jimenez-Morales, Rodriguez-Ramos, & Martinez-Ramirez, 2023)*

In general we can conclude that these general themes have resulted in similar solutions. Creating a building typology that can be described based on certain general characteristics:

1. The structure has a relation with the waterfront and in a certain way interacts with it. Particular connections or structures have been put into place, to make it possible to use the water for transportation or the manufacturing itself. Such as the ramps in the NDSM wharf (figure ...) which were used to get boats out of the water for maintenance.

2. Facades are built up from brick, with in most cases a steel suppporting structure. That devides the facade into closed parts and window openings.

3. The window openings are placed in a rythmic order and have significant dimensions. Glass is placed into a steel structure.

4. Skylights are used in the flat roofs to let in more daylight.

5. Openings and doors are of significant dimensions and can sometimes even take up the entire facade. Making it possible tomove large objects in and out of the halls.

6. Building services and its main construction are left completely visible in the interior, creating a raw and industrial atmosphere.

7. The main construction often exists of steel columns and steel trusses, creating large and unobstruced interior spaces.

8. Roofs are made of leightweight materials, keeping the use of construction material to a minimum.

9. Installations for the transportation of constructed parts are placed on the in-and outside of the building. Such as traintracks or cranes. Creating a specific characteristic of industrial buildings, in which it was necessary to be able to move the often massive manufactured products.

10. Ventilation facilties are placed on the outside of the building, often on top of the roof.

4.2. Mercon Kloos terrain

The MerconKloos terrain has been home to the company of Kloos steelworks Kinderdijk from 1849 to 1985 when it was taken over by the company Mercon. In 2015 operations were completely shut down and the site in Alblasserdam was abandoned.

Kloos started out as a company that was builing windmills in the area and later specialised in wooden and steel ships. In this time it functioned as a shipwharf, hence the location next to the river. Later the activities of Kloos shifted towards the production of steel constructions. Mainly used for the primary infrastructure in the Netherlands, such as traintracks, bridges, floodgates, electricity pylons and shipping docks.

4.2.1. Characteristic heritage values

The framework as shown in appendix I shows the characteristics of Kloos and the valuation of each of them. The characteristics of Kloos are in line with the general characteristics of maritime heritage sites, described in paragraph 4.1. Due to the fact that the Kloos site has not been in active use for almost 20 years, some of the characteristical elements are partially decayed or entirely gone. But still there are a lot of elements that show the typical character of a maritime site.

Mostly the items that were directly used in the production and manufacturing, such as machines are almost completely gone. But the characteristics of the site and structures are fortunately still recognisable and present. This is also visible in the value assessment in appendix I in which you can see that the highest values are in the categories of *site, skin, structure, space plan and spirit of the place. T*he values, based on the framework of Pereira Roders, that show the highest values are the *Aesthetical, Historic, Age, Rarity and Use value.* This shows which elements of the structures should definitely be taken into consideration during the adaptive reuse process. And will therefore also be discussed in more detail in this paper.

The site of Kloos is characterised by its long and slender shape oriented next to the river Noord. This placement next to the river already gives it part of its maritime character. This is further strengthened by the several traintracks, mooring buoys and remains of the piers. (*figure 1 and 8*)

Figure 8: Image of the remains of one of the piers at the Kloos site
Source: the author, 2023

In the skin of the structures there are several elements that are in line with characteristics found in the literature research. Such as the rythmic structure of the facade, build up out of steel structural elements with brick fill-in and large openings. The large window openings have steel lightweight structural frames. And daylight is also let in through the pyramid shaped skylights. (*figure 9 and 10*)

Figure 9: Pyramid skylights
Source: the author, 2023

Figure 10: Rythmic windows
Source: the author, 2023

The structure is mostly still intact and is typically made out of steel columns in combination with steel trusses. Carrying the weight of the lightweight roof structure and enforced there where it supports the cranes. (*figure 11*)

Figure 11: Image of the interior of the Kloos halls, showing the steel structure and enforcements for the cranes.
Source: the author, 2023

The spaceplan of the halls is a direct result of the former function as a steel manufacturing site and therefore also shows the same characteristics as found in the literature. The steel structure enables the open and unobstructed spaceplan of Kloos. Furthermore the spaceplan is organised in such a way that each of the production phases had its own place in the structure. The fact that the site is located between dike and river, results in the slender floorplan with a total length of 245 meters characterising the structure.

All the charcteristics of the former Kloos halls contribute to the spirit of the place. This is a combination of the original characteristics and the elements that have been added later during the period of vacancy. In general the hall shows the history of a blooming maritime industry in a time of craftmanship and manufacturing companies. With the later beginnings of a sanctuary for people to hang out, organise events and show artistic expressions. (*figure 12*)

Figure 12: Image of the interior of Kloos, with grafitti on the wall.
Source: the author, 2023

4.2.2. Possible integrations into the adaptive reuse process

Despite the fact that some of the original elements of the Kloos halls have disappeared, been removed or are degraded, a lot of the characteristics of these halls still represent the maritime history of this place. These characteristics should be looked at with care and taken into consideration in the adaptive reuse process from the start.

Examples of characteristics that should be integrated can be found in the higher valuation of these characteristics in the matrix of appendix I. The open floorplan, visible structures and services, large window openings, typical skylights, use of brick and steel, placement of structures on the site, elements that represent the former relation the waterfront and the visually unobstructed height and length of the structures will be leading in the approach towards the adaptive reuse project of the Mercon Kloos terrain.

This goal has already lead to a certain design approach. The program is based on functions that can be housed in flexible and freestanding units within the skin of the Kloos halls. Furthermore the functions should be able to relate to the history of Kloos, its manufacturing history and social meaning for its surroundings.

The tangible characteristics of the Kloos structures also influence the architecture of the design for the adaptive reuse project. Not only in use of materials, but also the rythm that is a given by the structure and façades of the original Kloos halls. The façades are restored, where possible and the rythm of the original is taken into the design of new facades in the project.

The intangible characteristics will also have a place in the design of the adaptive reuse project. Although the functions will be different from the original, they are part of the story of Kloos. By creating spaces for manufacturing companies and giving them the opportunity to display their products on site, the manufacturing identity of this place will remain and be made visible. To keep the history of Kloos alive at the same time, the public accessible places will tell the story of Kloos through images, stories in writing and items connected to the company (for example, remains of infrastructure or ships).

5.

The adaptive reuse process

As soon as maritime structures have lost their original function, they are often not perceived as valuable structures. In the general opinion of society they are often seen as a source of cost. But when we are more considerate of the actual opportunities for adaptive reuse of these structures, they can actually be seen as investments with a realistic, enduring future use. (Andrade, Jimenez-Morales, Rodriguez-Ramos, & Martinez-Ramirez, 2023) This approach can lead to preservation of the tangible and intangible heritage of the maritime past of The Netherlands. The casestudy of the NDSM wharf in Amsterdam is discussed in the next chapter. The evaluation shows in what way the adaptive reuse has been executed, in which ways it was successful and in which ways it could be improved for future projects.

Figure 13: The interior of the former NDSM Scheepsbouwloods showing the shell with seperate volumes
Source: Eva de Klerk

5.1. NDSM Wharf

The NDSM terrain is the former shipwharf of the "Nederlandsche Scheepsbouw Maatschappij", which was established in 1894. Due to a decrease of demand in the shipbuilding industry of The Netherlands, the company closed its doors in 1985 and left the NDSM terrain. For a while the terrain was abandoned, until squatters and artists moved into the terrain from other industrial sites in Amsterdam. From 1990 to 2000 the terrain was seen as a cultural sanctuary. The NDSM terrain became home to theatre groups, artists, musicians and small entrepreneurs. There were all kinds of spaces realised, varying from bakeries, cafés, neighbourhood kitchens and workspaces. Spaces that were needed in the core of the city, but not provided by the municipality at the time. (*de Klerk, 2018*)

5.1.1. Characteristic heritage values

In 2007 the ensemble present on the NDSM terrain was listed as a national monument (Rijksmonument). This decision was made based on the general importance of this site in the context of the cultural-historical value as one of the most important shipbuilding yards of the Netherlands. (*Rijksdienst voor het Cultureel Erfgoed, 2007*)
The monumentstatus has specifically been given to several structures on the site, namely the 'Scheeepsbouwloods' (Ship building shed) (*figure 14*), the 'Lasloods' (welding shed), the 'Timmerwerkplaats' (carpentry workshop), the 'Smederij' (the forge) and the 'X en Y Hellingbaan' (ramps X and Y) located on the waterfront. (*figure 15*) In figure 16 it is shown by which specific characteristic each of the structures has been listed as a national monument.

Besides the building specific valuations, there are also general characteristics of the structures contributing for monument status. The characteristics valuated by the State department for Cultural Heritage (RCE) are the following: brick facades, large blue-painted doors, steel window structures, steel structure with columns and trusses, the robust industrial appearance and the mostly unobstructed interior spaces.

5.1.2. The adaptive reuse process

As discussed in paragraph 5.1 the new use of the NDSM shipwharf grew organically, as people started to use the spaces in a way they thought suitable. The industrial character of the site, made it a popular place for all kinds of people. (*de Klerk, 2018*) The municipality noticed this and organised a contest for the redevelopment of the NDSM terrain.

This contest was won by the "Kinetisch Noord Groep", which was an organisation formed by the people who were already using the buildings of the NDSM wharf. With this plan the NDSM wharf became a building complex with self-managed and shared workspaces and businesses. (*Andrade, Jimenez-Morales, Rodriguez-Ramos, & Martinez-Ramirez, 2023)*

The redevelopment strategy was based on a bottom-up approach in which the end users were also the main planmakers for the area. The best example of this approach is seen in the 'Scheepsbouwloods', which is developed into a multifunctional meeting- and business area. The plan consists of a casco framework, in which spaces of different sizes can be created by the end user. According to the intiators of the 'Kinetisch Noord Groep' it is important to leave room for own initiatives and further development, in order to maintain the original character of the industrial structure and the spirit of the cultural sanctuary. (*de Klerk, 2018*)

5.1.3. Evaluation of the adaptive reuse process

The plan of the 'Kinetisch Noord Groep' only set out a framework in the interior of the buildings, especially the 'Scheepsbouwloods' and 'Lasloods'. They did barely touch the original structures of the building and maintained some of the determining characteristics as described in paragraph 5.1.1. With their plan and approach they made sure that the original open and monumental character of the interior was maintained. As well as the ship cranes, steel presses, pulleys and crane operating houses. (*de Klerk, 2018)*
In figure 13 the flexible interior framework is shown as well as the maintained cranes.
In appendix II it is also shown in more detail in which way the original characteristics have been maintained in the new funtional plan of the 'Lasloods' and 'Scheepsbouwloods'.

With this approach towards adaptive reuse, the intiators have ensured the future use of these buildings, by leaving the exact interventions up to the needs of the user. This ensures a continued usefulness of the buildings, but the preservation of its characteristics is vulnerable. Because of the very flexible character the new functions do not actively contribute to the storytelling of the historic meaning of the site. As they do not actively interact with the original elements of the building. The less defined approach is also vulnerable for later developments and other opinions on the importance of the maintaining of these original characteristics.

Taking this into account, we could conclude that the raw and industrial character combined with the large, open spaces have mostly lead to the new functions of the NDSM wharf. The characteristics that refer to the historic meaning of the structures still remain, but have not been actively taken into consideration when creating the new functional program of the structures. The functions also do not actively contribute to tell the story of the maritime history of the place. The extent into which the original structure's characteristics have been considered when defining the program, does therefore leave room for improvement in future approaches towards adaptive reuse projects.

Figure 14: Image of the Y-ramp at the NDSM wharf, after restauration. Unfortunately without a strong connection to the 'Scheepsbouwloods' and its new functions.
Source: www.ndsm.nl

Figure 15: Image of the exterior of the 'Scheepsbouwloods', left mostly intact to the original state as foundbefore the adaptive reuse project.
Source: www.ndsm.nl

Building	Listed monument characteristics
Scheepsbouwloods Monumentnumber: 528251	Brick façades
	Steel windowstructures, creating tall window openings
	Visible steel construction of trusses and columns with riveted joints
	Large, unobstructed interior spaces
	Skylights
	Façade name indication
	Big blue doors
	Interior cranes, and their supporting structure
Lasloods Monumentnumber: 528252	Brick facades
	Visible steel construction with welded and bolted connections
	Slightly pitched saddle roof with skylights on the sides
	Enclosed appearance in the façade
	Steel collonnades
Timmerwerkplaats Monumentnumber: 528253	Rythmically structured façade, with steel structure filled in with brick and window openings
	Slightly pitched saddle roof with skylights on the sides
	Steel English trusses and columns with trusses
De Smederij Monumentnumber: 528254	Structured façade, existing of brick filled elements, square window openings and large doors
	Blue industrial doors
	Slightly pitched saddle roof with skylights on the sides
	Steel construction of English trusses and columns
	Cranes and conductor tracks on the interior

Figure 16: Building characteristics for listed monuments at NDSM wharf
Source: www.monumentenregister.cultureelerfgoed.nl

6.

Conclusions

The goal of this research was to find ways to improve the approach towards adaptive reuse projects for maritime heritage sites. This meant tackling the critical gap in recognizing and integrating the cultural and historical value of maritime heritage structures into the adaptive reuse process. By examining the general characteristics of maritime heritage sites and evaluating two case studies, namely the MerconKloos terrain and the NDSM Wharf, valuable insights have been gained. The literature research in combination with the case studies show that there might not be a list of functions that will be the best fit for each maritime heritage site. Instead a list of several key considerations must be addressed comprehensively, to ensure the success of adaptive reuse projects for maritime heritage sites.

Firstly, it is crucial to clearly define the functional program and outline the architectural implications early in the planning process. This entails designing a framework for the proposed functions which results into a set of well-defined rules and guidelines. Additionally, decisions regarding whether the new additions will stand independently or interact with the original structure must be made upfront to avoid potential conflicts with the site's heritage characteristics.

Furthermore, achieving long-term viability requires the incorporation of a diverse mix of functions within the site. By integrating a variety of uses, the structures can remain in use even if one function experiences a decrease in demand over time. This necessitates a focus on flexibility in architectural interventions, ensuring that adaptations can accommodate different functions while preserving the integrity of the heritage structure.

Lastly, the functional program should consist of a blend of activities that will benefit the industrial scale and ambiance of the site, such as manufacturing spaces or art installations. However, it is equally important to introduce functions that contrast with the industrial character, thereby enhancing the site's originality and historical significance. This deliberate contrast allows the maritime heritage to shine through, reinforcing the site's identity rather than diluting it.

In summary, adopting an approach that prioritizes clear definition of functions, flexibility in design, and a balanced mix of uses enables architectural interventions that not only respect but also enhance the general characteristics of maritime heritage sites.

7.

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8.

Figure list

9.

Appendix

Appendix I: Case study Mercon Kloos:
Value assessment matrix

Appendix II: Case study NDSM Wharf:
General characteristics in relation to adaptive reuse