



THE ARMAMENTARIUM, EPISODE NO.8
RESEARCH REPORT- D.P. LANDMAN - 1049518 - RMIT

COLOFON

P1 Report - The Armamentarium, Episode no.8

Graduation Studio RMIT 2013/Q1 - Armamentarium/Paardenmarkt
TU Delft, Faculty of Architecture

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PREFACE

This report presents the research, which has been conducted during the first quarter of the RMIT (Restoration, Modification, Intervention and Transformation) graduation studio at the TU Delft faculty of Architecture. The RMIT department within the TU Delft faculty of Architecture has the primary objective to “no longer built the new, but to transform the existing structures” (prof.dr.ir. Jo Coenen). Following this ethos, the subject for transformation within the 2013/Q1 RMIT graduation studio consists of the Armamentarium Complex in the historic inner city of Delft. This former 17th century storage facility for military goods is an ensemble of several buildings that has grown and has been transformed many times already in the past in order to comply with the program it needed to house. The last function of the complex was that of a museum about the Royal Dutch Army. With the relocation of this function elsewhere the Armamentarium complex now lies vacant, ready to be given a new purpose.

My personal motivation to enrol for the RMIT graduation studio and the mixed projects studio in particular is because I have a great appreciation for successful transformations and regenerations of the present environment. This is not merely limited to 'old buildings' or harbour areas, of which there is a lot present in recent architectural media, but my interest is in transformation through all the scales. The idea of re-use in the current climate combined with the realisation of the effect we have on our planet makes transforming and re-using our existing stock not just sensible, but highly important.

Transformational projects are of course done with a great sense of variety but are not always successful. Every project is an entity of its own which poses its own unique problems that require custom solutions. Therefore it's vital, in my opinion, to get to understand the history of the object and its surroundings very thoroughly before you can even start to think about how it might be transformed into something more desirable. When this is done successfully you often find that the original character, use, soul of the transformed object shines through whilst being transported and successfully functioning within the present time of today. For some reason my interest seems to draw me in two very opposite directions. On the one hand I find transformation though a big gesture or statement intriguing. On the other hand I have a great appreciation for regeneration through absolute subtlety. The route that I will take in the graduation studio will be defined by the outcome of my research and might be one of the previously mentioned ways in which my fascinations lie. Of course it could also happen that it will go in an entirely different direction, as every project is unique.

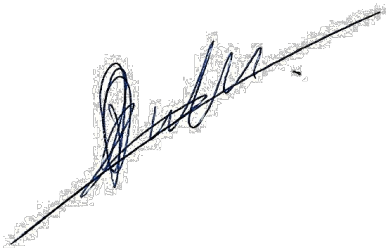


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INTRODUCTION

The Armamentarium Complex is an ensemble of several buildings, which has its origins in 1602 when it was established as the main storage facility for military goods in the Netherlands. Over the course of the 17th century the complex expanded into its current known volume of built space, mainly because of functional demand during the 80-year war and the 17th century wars against England. After the Netherlands became a monarchy in 1813 there became a decline in the military needs for the country and with the impending industrialisation that would follow the Armamentarium Complex began to loose its purpose. In the second half of the 20th century the ensemble of buildings was transformed into a museum about the Royal Dutch Army by means of conserving the existing structure and adding small elements the new function required. The museum has been rehoused elsewhere since the summer of 2013 and the complex of buildings now lies empty, waiting for a new purpose within the city of Delft.

The research, which has been presented in this report, has been done in order to formulate a base for a transformation proposal in order to give the Armamentarium Complex a new lease of life. The main research question that has driven this work is:

How can the ensemble of the Armamentarium, in unison with the peninsula it is situated on, be transformed in order to become an integral part of the historic inner city of Delft again?

In order to attempt to answer this question the research has been divided into three main elements: analysis of the urban setting, analysis of the ensemble, and analysis of the elements that make up the ensemble. Within these main elements of research there are sub-elements that focus on the relevant subjects. Following this structure on the scale of the city, the neighbourhood, and the ensemble the main themes of focus are:

- The political and social relevance of the urbanisation of the Armamentarium within the context of the historic inner city of Delft.
- The importance of the waterstructure, which defined the historic centre of Delft, and its link with prosperity and growth during the 17th century.
- The way the Armamentarium Complex has been connected to the urban fabric in the past, present and future.
- Main characteristics of the ensemble and its changeable character through time.
- The typological character of the main elements within the ensemble.

Initially an intense historical analysis has been done to provide a base of knowledge with regards to the city, the neighbourhood, and the previous use of the ensemble. From this, morphological analysis has been done in order to understand the urbanisation of the location and the way the ensemble grew into its current architectural form. Typological research of the main elements of the ensemble have provided insight in the main characteristics of the complex and by cross-referencing these characteristics with political and social-economical movements of the time the purpose of the actual complex is provided.

In order to attempt to answer the RQ the performed research has been focussed on uncovering the main characteristics and important elements through the different scales of the city, the neighbourhood, and the ensemble. Alongside the research runs an explanatory text in which additional information is provided and initial conclusions of the sub-sections are given. At the end the main conclusions are collected and ordered, from which an initial set of potentials is derived. The findings are organised within a matrix of dimensions of heritage, based on the Nara grid. The combination of conclusions, potentials, and values form the initial base for the design proposal in order to transform the Armamentarium Complex and make it become an integral part of the historic inner city of Delft again.

HOW DID THE HISTORIC INNER CITY OF DELFT ORIGINATE AND TRANSFORM INTO ITS CURRENT URBAN STRUCTURE?

In order to understand the political and social relevance of the urbanisation of the Armamentarium Complex, it is necessary to gain insight in the way the relevant surroundings of the complex have originated. Because the location on which the complex is built has been part of the historic inner city of Delft since its founding, we must know how this historic inner city has come to be and which part the location of the Armamentarium Complex has played within this.

The growth of medieval Delft is a story that is closely related to the way the Dutch utilised their watersystems. By developing the waterstructure and the land around it, one could create suitable land on which a settlement could be built. In the case of Delft this is exactly what happened and it is clearly visible that the built up city of medieval Delft has a strong relationship with the way the waterstructure and the land are managed and cultivated.

Following the first cultivation of a part of the existing creek system of de Gantel (6.1) the first settlement originates in which the location of the Armamentarium Complex is already present (6.2). Located on the southern side of the town the location forms an entrance point and is utilised as a place of gathering. As the town expands the cultivation of the surrounding lands the waterstructures are altered and become part of the town (6.2, 6.5). With this the town can expand further and Delft prospers (6.4, 6.6). The future location of the Armamentarium Complex is still one of the main entrance/exit points of the city and its use is mainly for non-polluting industry, amongst others a dockyard and a carpentry wharf.

Because of the prosperity of Delft and its function with regards to trade it becomes necessary to built fortifications in order to protect the city against criminals and rivals (6.8). The future location of the Armamentarium Complex becomes enclosed and protected within the city walls and with the erection of seven city gates it maintains its position on the southern edge of the city and is closely linked to this entrance/exit way.

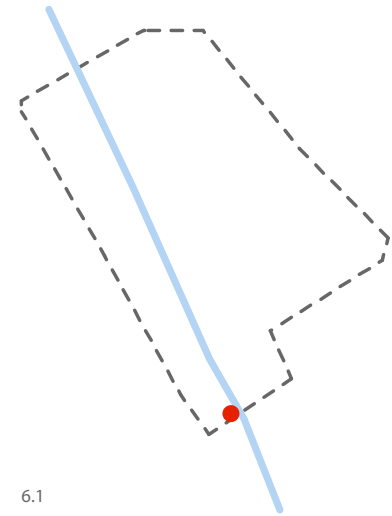
After the fortifications were realised there was a big fire in the city, known today as the great city fire of 1536. Big parts of the city had to be reconstructed, an operation that was swiftly initiated and realised. Because of the importance of the waterstructure within the city, with regards to transportation and drainage of the land, the reconstruction of the city followed the original plots and the medieval structure of how the city had grown was not affected or altered.

The direct surroundings of the future location of the Armamentarium Complex had been architecturally re-shaped, albeit within the historic structure of the medieval town plan of Delft. At this moment in time still in use as a carpentry wharf, this was about to change because of the impending war with Spain.

The history of the location of the Armamentarium Complex, up until the actual complex was built, has close connections with the social, economical and political context of the medieval city of Delft. From the perspective of trading and industry it has played a vital role within the city and because of its location, directly behind the main southern defensive gates, it was one of the main points of relevance within the medieval city structure.

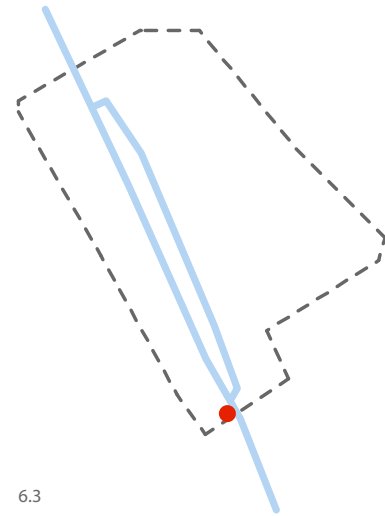


Around 1100 the original creek system of de Gantel forms the base for the first settlement. The main waterway is widened and becomes a 'Delf' (old Dutch for gracht). This waterway functions as the main irrigation canal that is used for the early extraction of peat in the westerly direction.



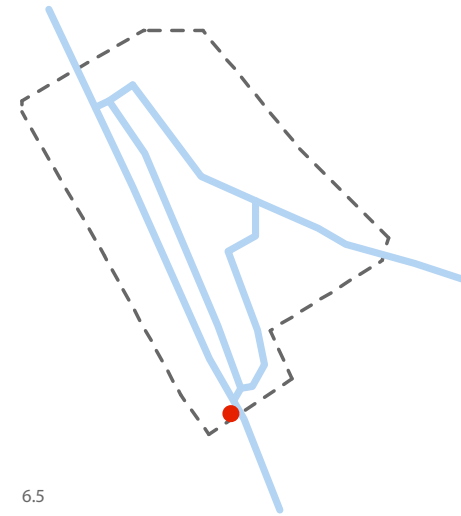
6.1

Because of the speed of the early extraction of peat the town grows and so does its waterstructure. A parallel canal is dug and the new and old Delft are created. The land in between the two canals is raised with the acquired soil and a solid base for expansion is created.

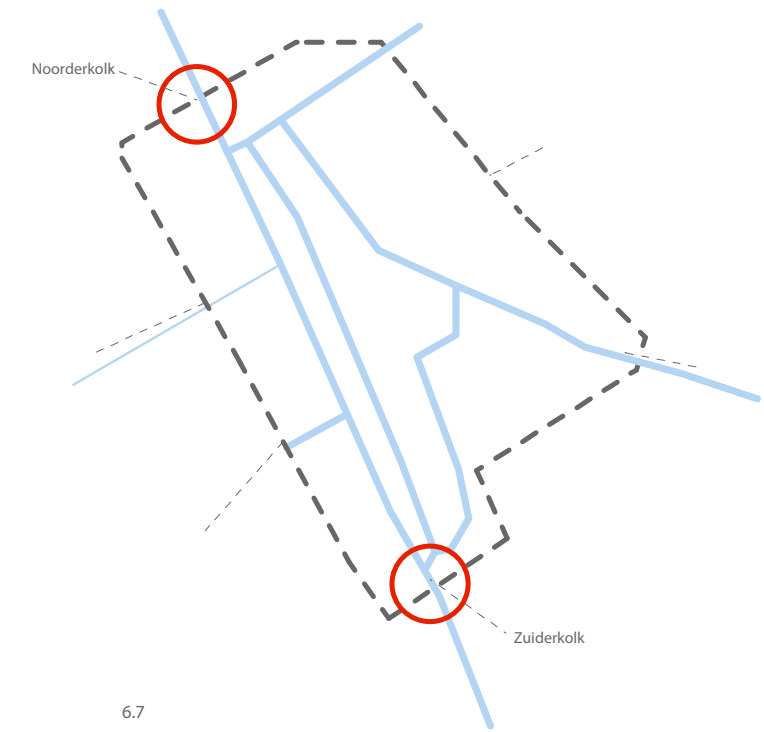


6.3

With prosperity comes growth and this is also the case for Delft. The watersystem is expanded by using another existing waterway from the creek system. Together with the irrigation canals the main waterstructure of Delft reaches its current shape. The accumulation of water together with the way the city is used two main bodies of water are constructed, one in the north and one in the south.



6.5



6.7

settlement on old creek system

Delft acquires cityrights

Reaches current shape/outline

fortifications are built

great city fire

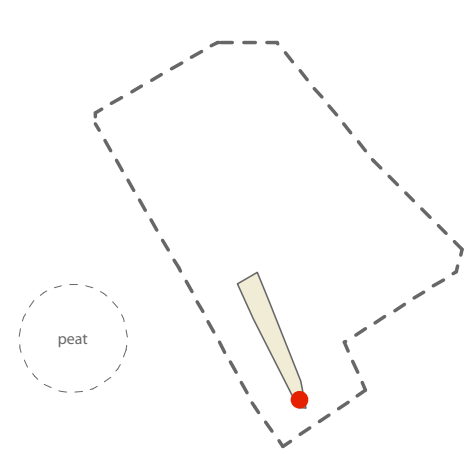
1100

1246

1311

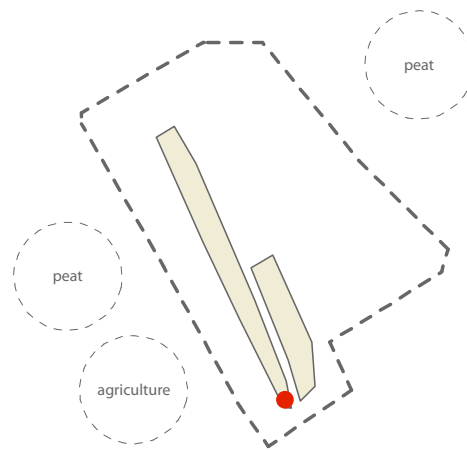
1514

1536



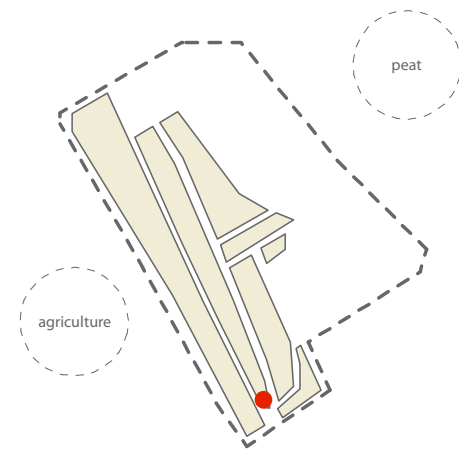
6.2

Along the 'Delft' the first settlement emerges. In the western direction a fast extraction of peat commences. The medieval landscape is claimed by the first settlers and the town slowly starts to grow. Remarkably the location of the Armamentarium already exists.



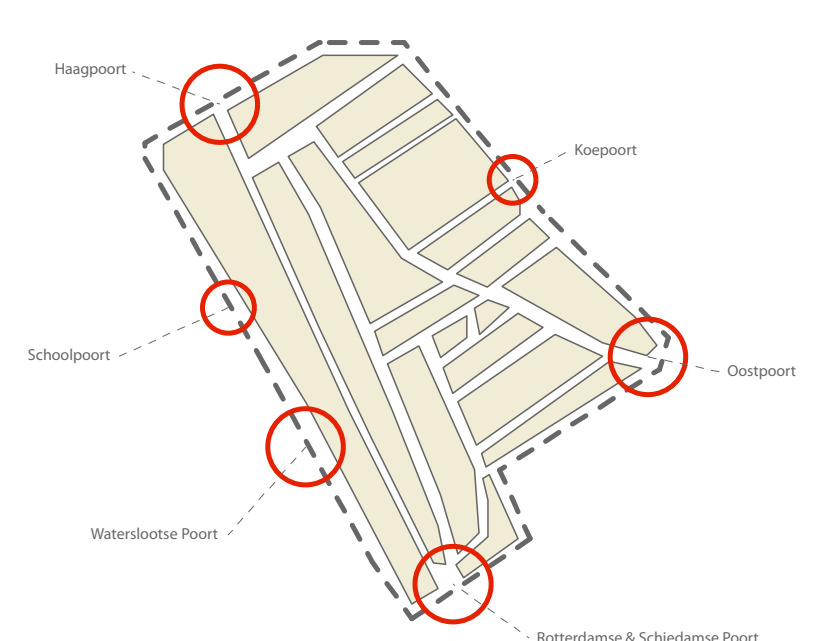
6.4

Within the first 100 years most of the peat in the western direction is extracted. This is very quick in comparisons to other Dutch regions at the time. The main reason for this is the perfect wet soil conditions for peat extraction. The claimed land is cultivated and turned in to agricultural land. Extraction of peat proceeds, but is now more concentrated towards the east of the town.



6.6

With the cultivation into agricultural land Delft starts to prosper and becomes the regional market town. Because of its regional importance, Delft acquires cityrights in 1246 and the town continues to expand. Following the irrigation patterns from the peat extraction the city is shaped into the easterly direction. The city reaches its current outline around 1311 and is slowly transformed into a defensive city because of outside threats.



6.8

WHAT IS THE RELEVANCE OF THE WATERSTRUCTURE IN RELATION TO THE PROSPERITY OF DELFT?

The waterstructure of the city of Delft grew organically during the 13th and 14th century because of the expansion of the city, directly related to the extraction of peat, the cultivation of land, and the following position as a local trading/marked town. When Delft acquired its city rights around 1246 developments started to change on a larger scale. Because of the local importance on a social and economical level it meant that the city needed to be protected more thoroughly. Because Delft had gained city rights it was allowed to build a stone fortification structure. This was combined with a circular moat that not only acted as another barrier for safety, it also became part of the main waterstructure of the city and its use was threefold: water management, defensive barrier, and infrastructural element.

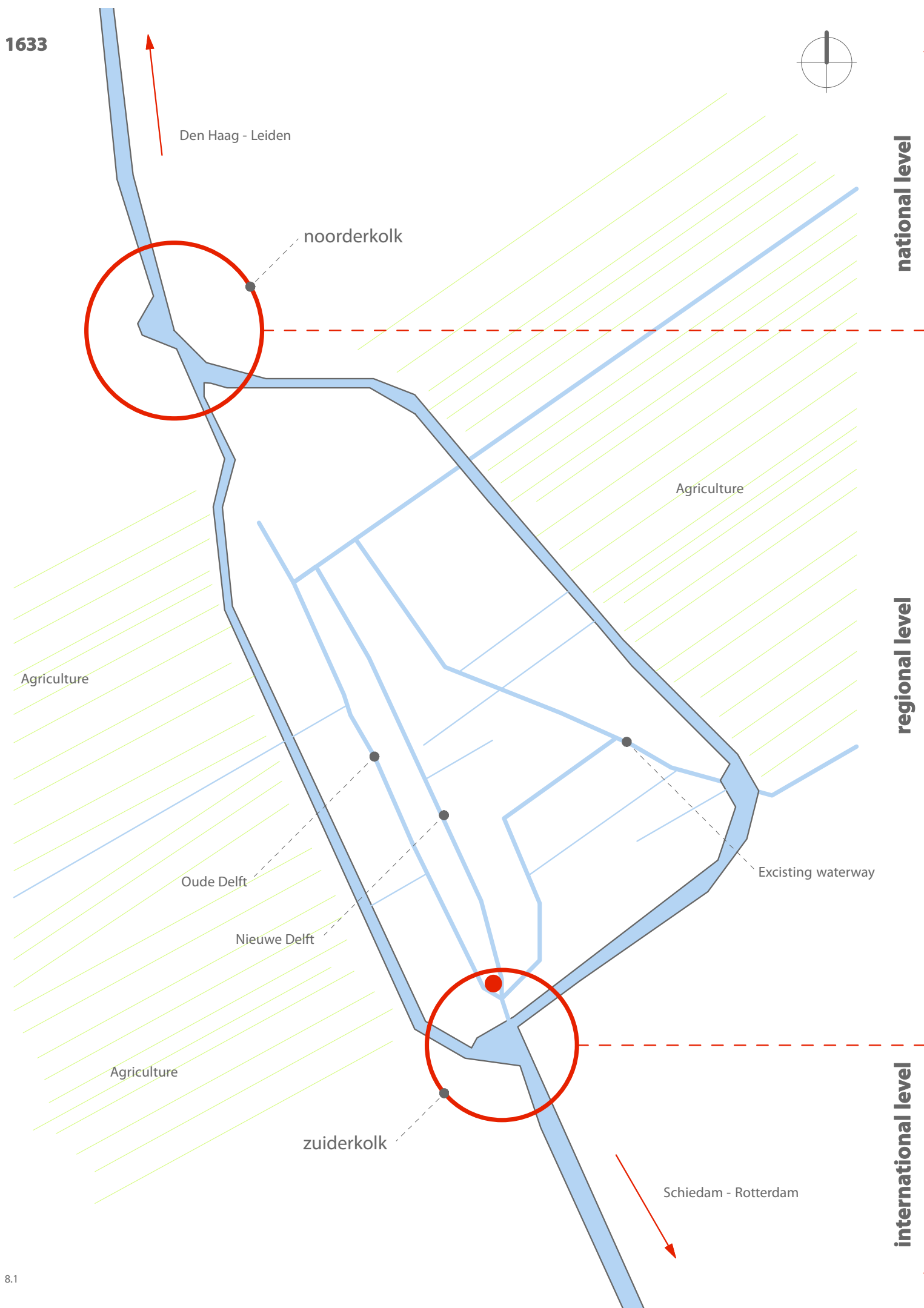
The defensive wall around the city had seven gates (6.8), of which there were three main ones: The Haagpoort on the northern side of the city, and the Rotterdamsche & Schiedamse Poort on the southern side of the city. The reason these gates were the most important is directly related to their position along the waterway. Transport of goods and people was mainly done over and alongside the canals that connected to surrounding towns and cities. For this reason it was necessary to check people and goods that wanted to enter or leave the city and two bodies of water were created in front of these main gates: the Noorderkolk and the Zuiderkolk.

Because of the strong connections Delft had established through their infrastructure over water this meant that trading evolved from a local and regional relevance into a national relevance. With the creation of Delftshaven, a satellite seaport along the Merwede in southern direction next to Schiedam, the city also started trading on an international level. This growth in prosperity was initially followed by social and economical growth but it didn't take long until Delft became politically more relevant on a national level.

In 1548 the Dutch Republic went to war with Spain (the 80-year war) and this meant that the Republic needed to organise its military goods properly. Up until then military supplies were scattered over different cities, housed in places that were not purposely built for this but were just available. A lot of monasteries for instance were used to house military goods. The Republic decided that thee should be a centralised storage facility for these items and a few locations were considered, amongst them Leiden, The Hague, and Delft. Because of Delft's growth from a social and economical perspective, the city now wanted to position themselves more strongly in the political framework of the Republic. The location behind the southern city gates was vacant, the carpentry wharf was not in active use at this moment in time, and the city offered this space to house the new storage facility. On top of that they offered this free of charge and would financially contribute to the construction. This offer was so competitive that Delft got the commission and the Armamentarium was built on this location in 1602. In addition to the lucrative offer the city made, with regards to the location and the construction, the way it was positioned on the southern body of water, the Zuiderkolk, meant it had great connections to the sea and it was possible to access the stored good quickly and effectively.

The waterstructure of Delft has played a vital role in the growth of the city and its prosperity. Because of the increasing political engagement with regards to the 80-year war and development of the first phase of the Armamentarium Complex the location has a strong presence in the southern urban fabric of the historic city centre. Strongly connected to the surrounding water from a functional perspective makes this an integral part of the city.

1633



THE CANALS OF DELFT

The main waterstructure of Delft already reaches its current form during the 14th century. Minor changes are made throughout the 15th century and in the early 16th century, around 1514 the canal that forms the outline of the city is enlarged.

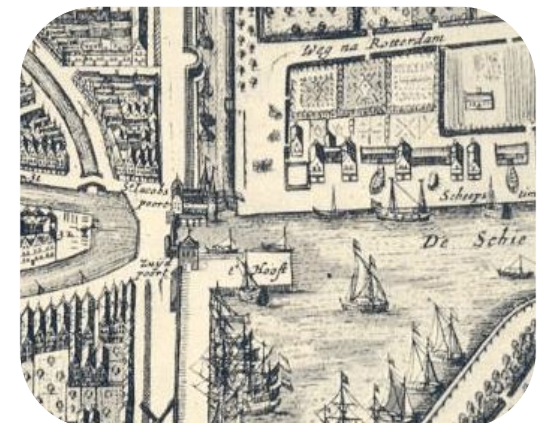
The early waterways brought Delft mainly irrigation in order to extract peat. After this extraction period though the land is cultivated in to agricultural land and as mentioned before, Delft becomes a trading town. Initially the local trades are being serviced and the town becomes the local trading centre with a vibrant market. With the growing prosperity however also come the need to defend the city against any invaders. With the enlargement of the outer canal structure this is combined with defensive works.

The created city gates are placed alongside the main entrance points of the city (6.8) and together with a stone wall security is provided. This is also noticable in the waterstructure with the creation of two bodies of water, one in the north and one in the south: noorderkolk and zuiderkolk. These bodies of water served more than one purpose, because not only were they very important for the regulation of the watersystem, they also acted as defensive bodies of water at the two main entrance points as well as a gathering space for ships.

The function of these bodies of water with regards to trading were very important. The noorderkolk serviced the connection over water in the northerly direction and provided trading with The Hague and Leiden. Delft started to transition into not just a regional trading centre, but also became important on a national level. The zuiderkolk on the other hand had even more importance, because this was the connection with the river Schie, which through de Merwede and the Maas connected to the sea and therefore the world. Because of its prime location and excellent connections the defensive city of Delft acquired the opportunity to house the Armamentarium, a centralised storage of military goods, just behind the southern defensive works and directly situated on the zuiderkolk.



8.2 - Schiedamse en Rotterdamse Poort, A. Rademaker.



8.3 - Situatie Kolk, W. Bleau, 1648.



8.4 - Gezicht op Delft, J. Vermeer, 1660/1661.



8.5 - Huidige situatie, 2013.

WHAT WERE THE MAIN URBAN CHARACTERISTICS OF THE LOCATION WITH REGARDS TO THE KOLK?

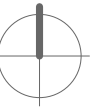
The importance and relevance of the way the city of Delft has grown in relation to its waterstructure has proven to be very important. The location of the southern body of water, the zuiderkolk, has played an integral part within the history of the city. Because the location of the Armamentarium complex is directly situated on this body of water, and its specific function that suited this location so well, it is important to know what the main characteristics of this location were. This way we can understand how this part of the city used to function and we can relate it to the present environment and current situation.

As previously discussed, the way the city was connected by means of its waterstructure was very important in the development of not only the city itself, but also the location of the Armamentarium Complex. The zuiderkolk can be divided in an inner kolk, which lies within the defensive city boundaries, and the outer kolk, which lies outside the defensive city borders. The inner kolk is situated right in front of the location and functions as a water square. This square is connected via a bridge to the outer kolk and therefore the river Schie and all the benefits this has to offer from social-economical, but also a political perspective. The inner kolk connects to the rest of the inner city via the canal system and because of the Armamentarium Complex has the function of a storage facility there is direct access from the water, the Oude Delft, into the buildings of the complex.

Because the ensemble is situated on a peninsula there is free movement around it possible with vessels that utilise the water system. Because there was also an access needed from land there is a quay situated on the eastern side of the complex. This is inevitably a dead end, because it stops at the tip of the peninsula, and functions partly for the distribution of goods and allows access into the complex for its users.

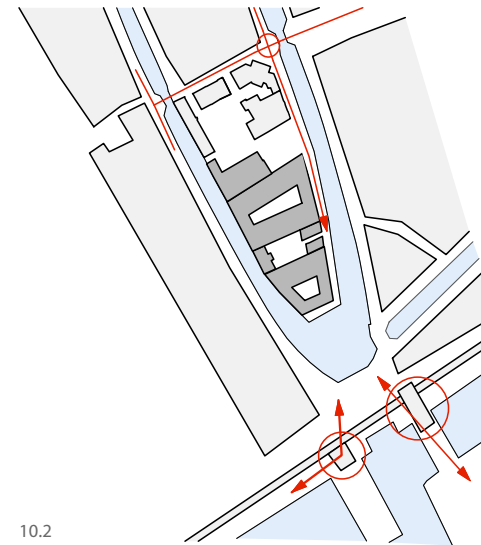
The water structure is surrounded by the 16th century architecture along the canals, which had been built after the great city fire, and the defence structure with a square in front of this. The Armamentarium Complex lies in the middle of these boundaries and forms the northern edge of a defined inner city square which is partly made up out of the inner kolk and partly of the square behind the defence structure.

These ingredients of the urban characteristic of this part of the historic inner city mark the urban setting of the Armamentarium, the peninsula, and the inner kolk and provide a clear focus towards the location from all directions.



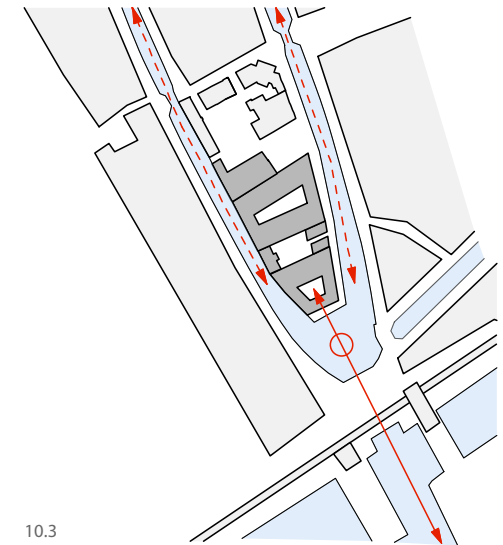
1602 - 1692

Inbetween 1602 and 1692 the complex of the Armamentarium is realised. It is located on a peninsula, which in its turn has been shaped by the connection of the two canals: Oude Delft and Nieuw Delft. This body of water within the city walls is also known as the inner Kolk, whereas the body of water outside the city walls is known as the outer Kolk.



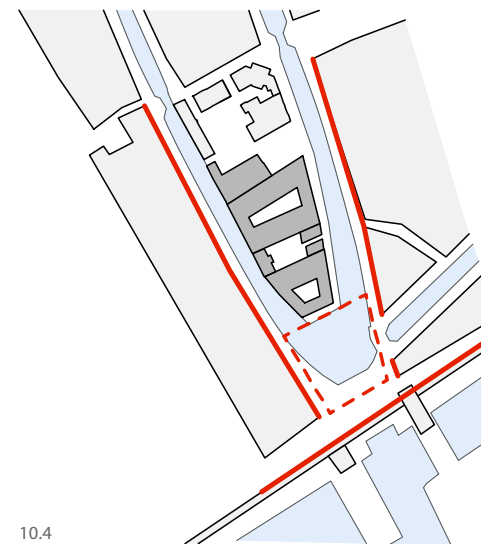
MAIN CONNECTIONS - LAND

The inner Kolk is connected through the two main southern gates: Schiedamse Poort & Rotterdamse Poort. The peninsula connects via an eastern quay.



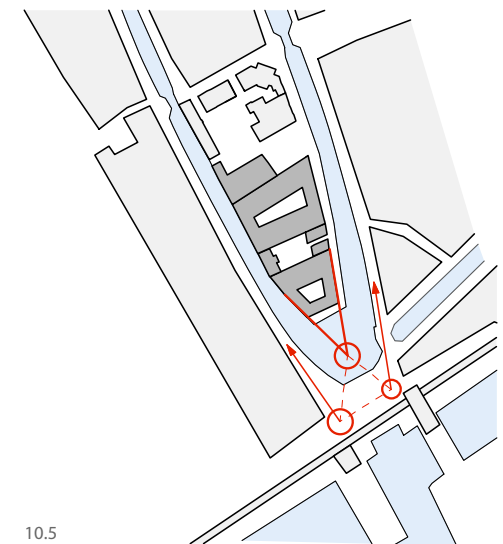
MAIN CONNECTIONS - WATER

The inner Kolk connects the river Schie with the city canals. The peninsula is directly connected through the inner Kolk.



DEFINITION

The urban space of the Kolk is defined by its edges: the buildings along the canals, the Armamentarium, and the southern defense wall. The peninsula has a central position within this inner city fabric.



FOCAL POINT

The inner Kolk is emphasised by the focal point of the peninsula. There is a strong relation between urban space in front of the city gates, the body of water of the kolk, and the inner city canals.

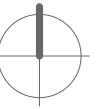
WHAT ARE THE MAIN URBAN CHARACTERISTICS OF THE LOCATION WITH REGARDS TO THE KOLK?

The Armamentarium Complex was constructed between 1602 and 1692 and the way this was done with regards to its urban setting is quite clear. Strategically placed on the southern main access/exit point of the city on a peninsula that was made available for this specific function by a city with political motives (10.1). Behind the city walls this was a clearly defined space, which played an integral part in the cities infrastructure (10.4). When we look at the location nowadays though the first thing that immediately stands out is the fact that the defence structures are not there anymore.

During the period in which the ensemble of buildings that make up the Armamentarium Complex was constructed (1602 - 1692) the Dutch Republic grew into the most successful trading nation in the world. This 17th century Golden Age meant that the Dutch cities that were properly connected to the watersystems and the sea prospered because of the increasing trade with other parts of the world. Many of these newly discovered parts were colonised by the fleet of the Republic and because of its success there was the need to keep these colonies safe. The function of the Armamentarium as a centralised storage facility for military goods meant it had a direct relation with the wars at sea that were fought to keep the colonies safe, and the wars that were fought on land to keep the Republic and its cities safe. The Armamentarium Complex grew accordingly to this need.

After the French period (1795 - 1813) the Dutch Republic became a Monarchy and needs with regards to defensive structures became less. Most of the city gates and its defensive wall structure were demolished during the first half of the 19th century, the Rotterdamsche & Schiedamsche Poort around 1835. The reasons for this are twofold: there was less need for such extensive defensive structures, but more importantly, in order to expand the city and make better connections to other cities over land these structures became barriers. With the impending industrial revolution the demand for expansion grew and the urban situation around the Armamentarium Complex changed.

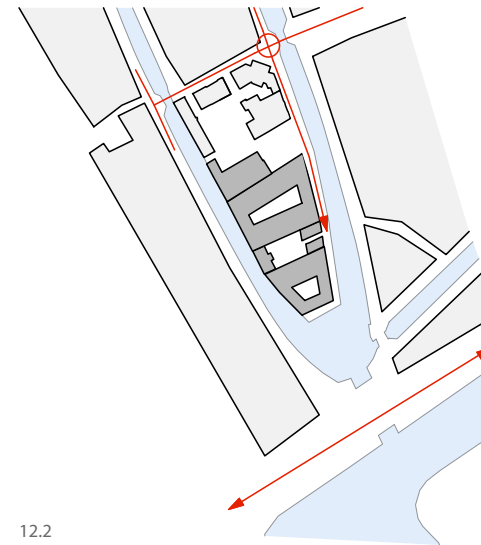
Because the new needs for the city of Delft were mainly realised outside the borders of the historic city there has been little change within the urban fabric of the location. The buildings that surround the location and the streets and canals remained unchanged for the most part, the character of the open space in front of the ensemble on the other hand changed drastically. With the removal of the defensive structures the definition of the urban space has changed. The southern edge is less defined and has become part of a transitional route between different parts of Delft. Also the use of the complex changed from a storage facility to a cultural destination with it housing a museum about the Royal Dutch Army. The connections over land had become more important than the connections over water and this meant the complex today was used very differently. The connection of the complex through the eastern quay became the main point of access and the position on the water became mainly monumental. This monumentality is dramatized even more with the fact that there is no defensive wall anymore to obstruct the view from the southern direction.



12.1

2013

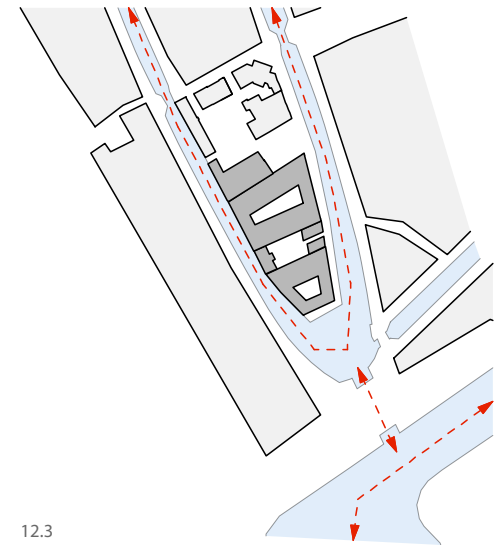
At present the situation has changed. After the French period in the Netherlands (1795 - 1813) the country stopped being a republic and became a monarchy. The need for defensive structures started to become less and most city gates started to be used to collect tax from incoming traders. The city gates and the defensive wall were demolished and the Kolk area was redefined. The structure within the historic city stayed mostly the same, the southern boundary on the other hand was transformed.



12.2

MAIN CONNECTIONS - LAND

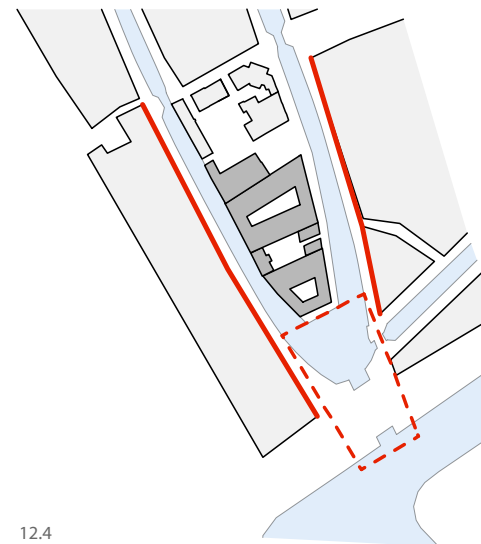
The inner Kolk is not a destination zone anymore but a transition zone, which connects the Spoorzone with the Zuidpoort. The peninsula connects via an eastern quay.



12.3

MAIN CONNECTIONS - WATER

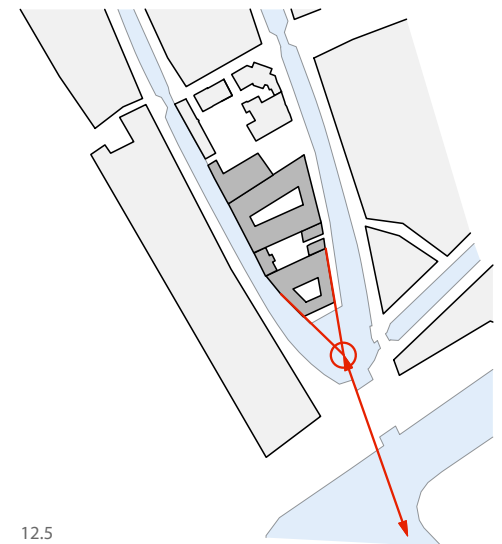
The inner and outer Kolk are part of two separate waterroutes. They are physically still connected. The peninsula has no direct connection with the inner Kolk.



12.4

DEFINITION

The urban space of the inner Kolk is defined by its edges: the buildings along the canals and the Armamentarium. The southern edge is open and less defined. The peninsula is positioned as the southern edge rather than the old southern defense wall.



12.5

FOCAL POINT

The inner Kolk is emphasised by the focal point of the peninsula. There is a strong relation between the inner and outer Kolk.

WHAT ARE THE MAIN URBAN TRANSFORMATIONS OF THE LOCATION WITH REGARDS TO THE KOLK?

The urban structure of the historic inner city of Delft has, remarkably, remained greatly unchanged. After the great city fire the plots were rebuilt and reconstructed in the same way, albeit with a 16th century architecture. The main transformation of the location of the Armamentarium Complex occurred when the city wall was taken down and the Delft started to expand outwards.

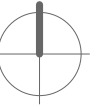
For the ensemble of the Armamentarium the expansion of the city and the less demanding use for the storage facility this meant that the connections of the complex and its urban structure shifted. The connection over land became more important but wasn't altered. This resulted in a shift of entry towards the building. Were in the past the main point of entry was from the south over water, with the northern connection over land via the eastern quay being secondary, this connection over the quay now became the main one. Because the function of the complex had changed into that of a museum this eastern part of the ensemble became an entrance zone. The different volumes that make up the ensemble and the fact that this connection along the quay doesn't focus on one clear point of entry make this a slightly muddled connection of the complex with the surrounding inner city. This is reinforced by the regulated function of the museum with a big gate preventing people to wander around the peninsula. The clearly defined space in front of the Armamentarium, behind the old city wall, has lost its definition and now functions mainly as a transitional space between different parts of Delft.

The water structure has remained mostly the same in its appearance, but is very different in its use. The inner and outer Kolk are disconnected with regards to its use. They function as two separate bodies of water that are still physically linked together because of water management, but don't functionally are used together. The inner Kolk and canals of the inner city are mainly used for tourism and are not to be used freely by the inhabitants of the city. The outer Kolk can be use freely and provides a connection with the surrounding cities and town from a leisure perspective.

With the removal of the city wall the space in front of the Armamentarium might have lost part of it's inner city definition, on the other hand it has enhanced the focal quality of the tip of the peninsula with the city outside of its historic borders.

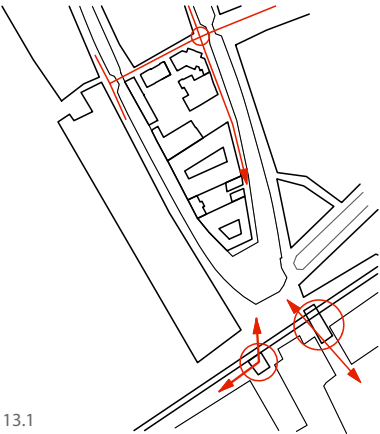
Drawings 13.1, 13.2, 13.3, 13.4 based on map by W. Bleau, 1648.

Drawings 13.5,13.6, 13.7, 13.8 based on digital maps of the current situation, TU Delft Map Room, Faculty of Architecture.

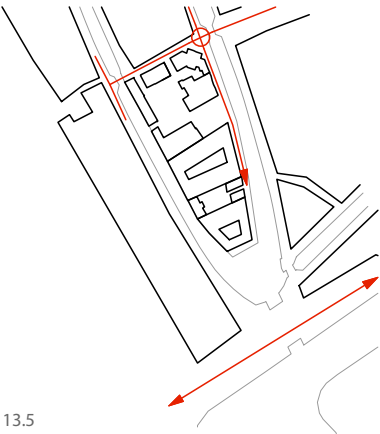


CONNECTION

- clear connection via eastern quay.
- direct result from the program.



13.1



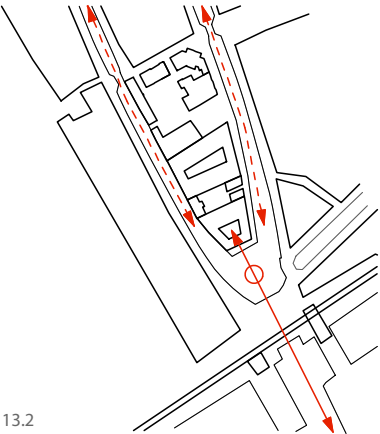
13.5

CONNECTION

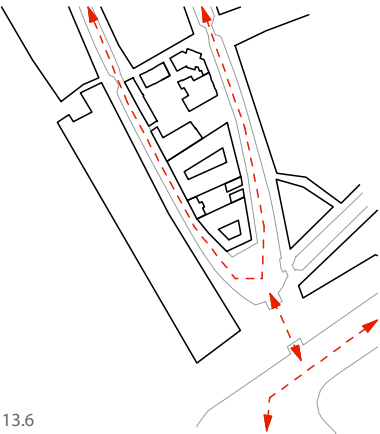
- muddled connection via eastern quay.
- remnant from former program.
- transitional space, not a clear destination.

CONNECTION

- part of inner city watersystem.
- directly connected to the Kolk.
- strong functional use relationship.



13.2



13.6

CONNECTION

- separated watersystems of Kolk and canals.
- historic connection between both systems.
- less active use, mainly tourism.

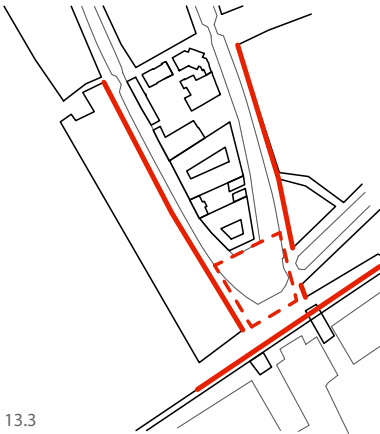
1602



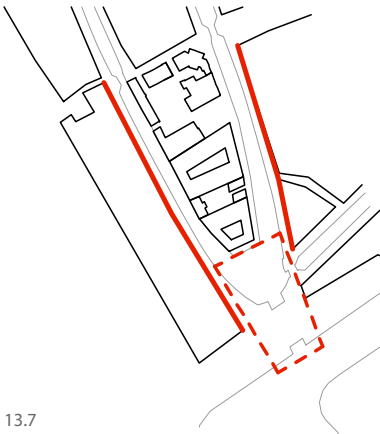
2013

DEFINITION

- supported definition through streets.
- enlarged definition through square.
- clear boundaries square.



13.3



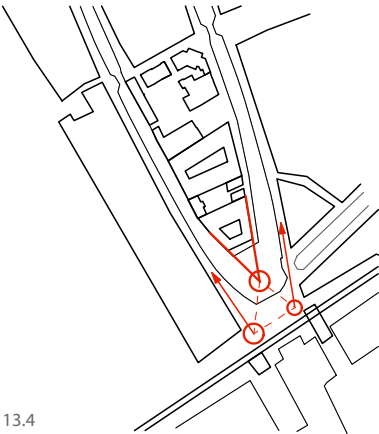
13.7

DEFINITION

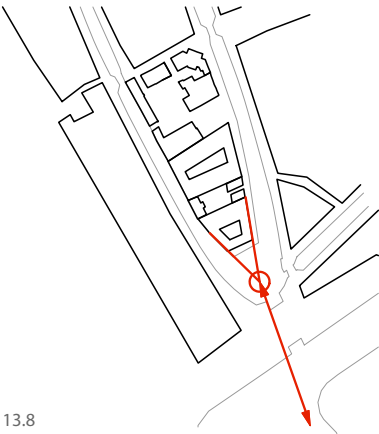
- supported definition through streets.
- enlarged definition through square.
- less clear boundaries square.

FOCAL POINT

- focal point resulting from building shape.
- emphasised by location on the Kolk.
- part of encribed city space.



13.4



13.8

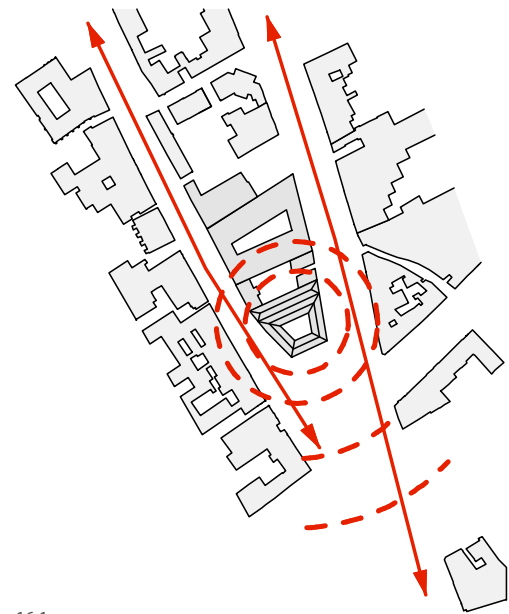
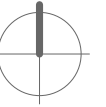
FOCAL POINT

- focal point resulting from building shape.
- emphasised by location on the Kolk.
- focal point from river Schie and Kolk.

WHAT ARE THE MAIN URBAN CHARACTERISTICS OF THE LOCATION WITH REGARDS TO THE CANAL?

The main focus of the ensemble of the Armamentarium is very much on the southern body of water of the inner Kolk and the definition of this space within the inner city. It is important to realise that the complex is the southern end of one of the oldest parts of the city, between Oude and Nieuwe Delft, and is also connected with the characteristics of these canals.

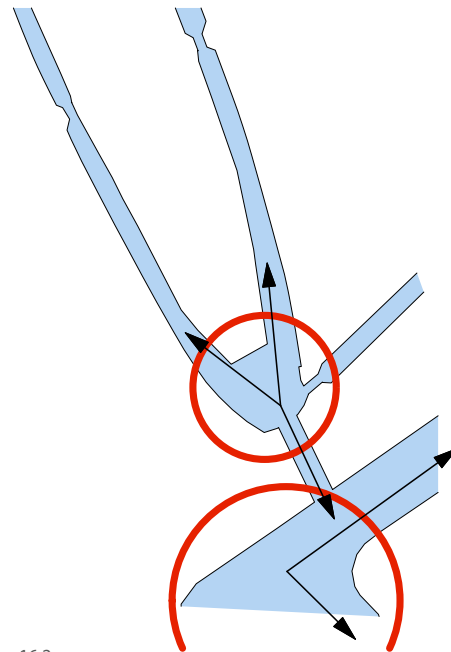
Made up out of four main ingredients they define the public space though the 17th century architecture of its borders, the structure provided by the water, the emphasis on this by its coinciding infrastructure, and guidance by means of the green structure. The Armamentarium Complex stands out within this structure because of the sense of scale and diversity in architecture. Further emphasised through the connection of the two canals within the inner Kolk and the fact that the infrastructure results in a dead end on the tip of the peninsula.



16.1

HISTORIC BUILDINGS

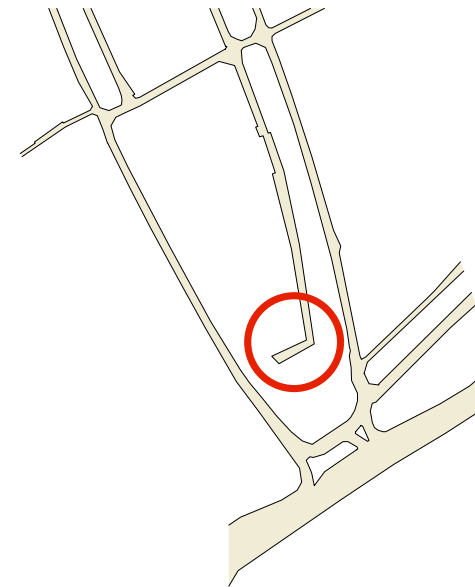
Stands out with regards to scale and architecture.



16.2

CANALS

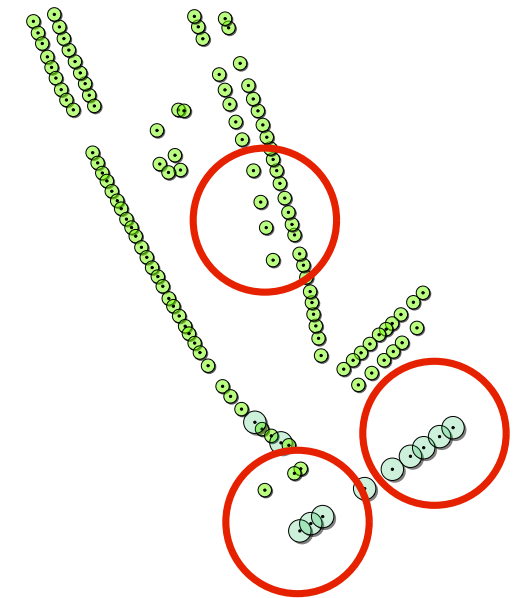
Connection of two watersquares which form end and beginning.



16.3

INFRASTRUCTURE

Due to the original function and means of transportation the only dead end.



16.4

GREEN STRUCTURE

Emphasis on remarkable features readable in green structure.



16.5 - www.grachten.net



16.6 - www.grachten.net



16.7 - www.grachten.net



16.8 - www.grachten.net

**WHY DID THE WATER SYSTEM AS A MEANS OF
TRANSPORTATION LOOSE ITS SIGNIFICANCE EN
WHEN DID THIS HAPPEN?**

The urban situation of the location of the Armamentarium Complex has evolved alongside its water structure. This was not only one of the most important structures with regards to the irrigation of the land, but it also served as the main structure when it came to livelihood and prosperity. It was the main transport structure of goods and for that reason of vital importance.

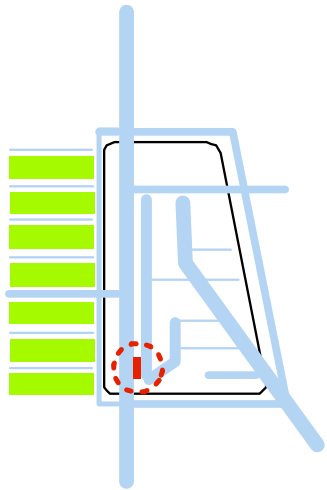
The Armamentarium was strategically situated on the main axes of water, which was needed because of its clear functional needs (18.1). During the 18th century the Dutch Republic was at a bit of a standstill. The Golden Age had come to an end because of several wars with England and this resulted in the fact that the Republic became a puppet state of France in 1795. Under the rule of the French the Republic unified itself and with the battle of Waterloo the French Period came to a definitive end. The Dutch Monarchy was founded and the future looked bright yet again. Up until this point the main infrastructure for the transportation of goods was still the water. The Oude Delft functioned as the main canal through the city and had functioned well since it had been dug in the early 11th century. After Napoleon was defeated at Waterloo the mainland of Europe came to peace and was er water. Also there had been agreed a structure with the industrial areas along the river Rijn in Germany, called the 'Rijnvaartverdragen'. With the industrialisation the size of he ships grew and the main waterways had to be maintained in order to keep progress going. The water structure of Delft couldn't compete with this because of its size and because of its location. The main waterway in the area became the river Maas, which passed Rotterdam, and from here a trading central would emerge where train and water would meet.

Delft became primarily connected by the train and not by the water anymore (18.2) and this new structure was made outside the historic city centre, on the western side. From this moment the place of the location of the Armamentarium changed significantly. Where it first was placed alongside the main route, it now was being side tracked by the new developments. Over the course of the second half of the 19th and the first half of the 20th century the industrialisation picked up speed and southern part of what we now know as Zuid-Holland developed immensely with regard to trade. Rotterdam was the undeniable centre of this because of its strong links with the back land of the river Rijn and the coalitions that were made, but also by train because of the strong links further down south with Antwerp. With this prosperity came opportunity for work and the entire region, Delft included, started to grow rapidly. For the first time Delft started expanding outside the historic city borders (18.2, 18.3).

In the 1960's the city of Delft knows a vast expansion (18.4). The train tracks are drastically remodelled and are made into a viaduct. The arrival of the car has made a big impression and this means the ever-expanding city needs to cater to this phenomenon. Because these new developments take place outside the historic city centre, it means that the location of the Armamentarium becomes more isolated. The main infrastructure bypasses the ensemble and the functional need is not there anymore to plug in directly into this system.

The current developments of yet another transformation of the rail system (18.5) mean that the emphasis again is placed just outside the historic city centre. The location of the Armamentarium remains side tracked and where the old city used to stop now an different sort of boundary defines the southern edge, in the appearance of a traffic zone.

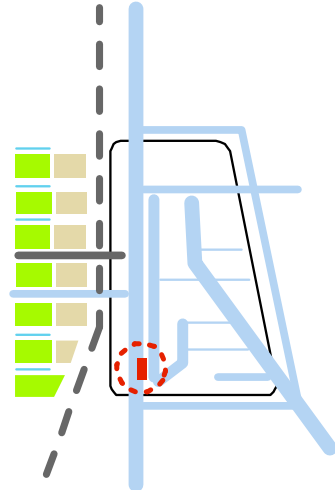
The location has undergone a shift from being on the main point of access of the city with a function clearly related to its urban setting, to being positioned within the same structure poorly connected to the inner city infrastructure which now are its main means of access.



18.1

< - 1850

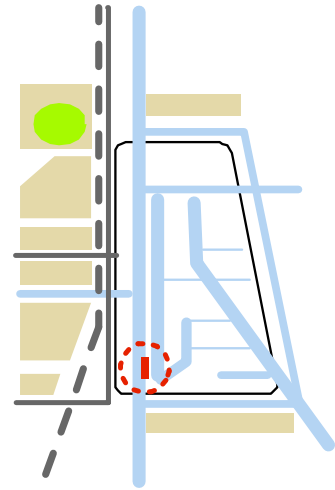
Agrigultural land following an intense period of peat extraction in the 10th and 11th century.



18.2

1850 - 1900

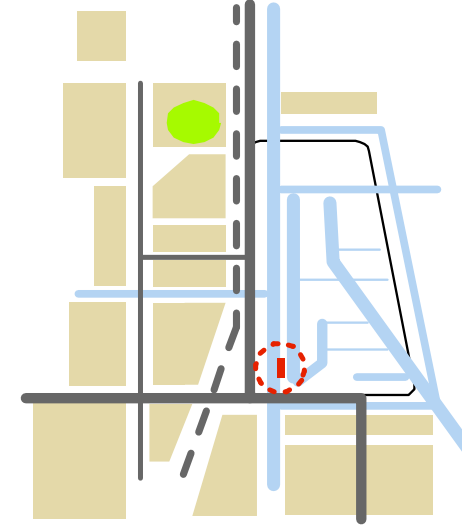
The train arrives in 1847 and marks the beginning of the transformation of Delft outside its historic city borders.



18.3

1900 - 1950

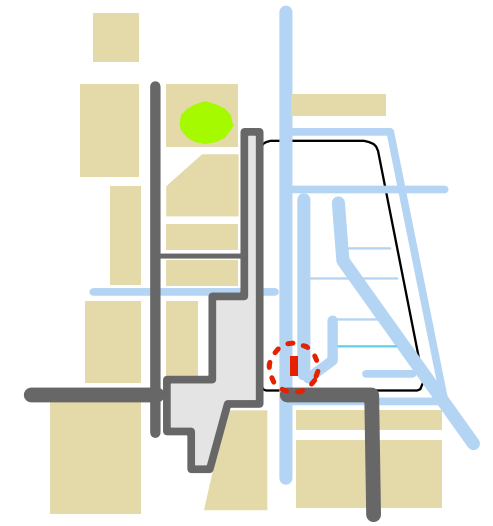
Following the industrial revolution the demand for housing increased and Delft continued to expand. The first university buildings start to appear on the outskirts of the historic centre.



18.4

1950 - 2000

With the vast expansion of the population Delft grows very quickly. Traffic becomes more demanding and the train becomes a viaduct, disrupting the connection between the western edge of the historic city and the adjacent neighbourhoods.



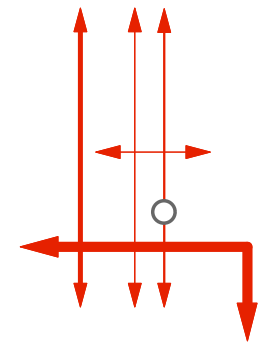
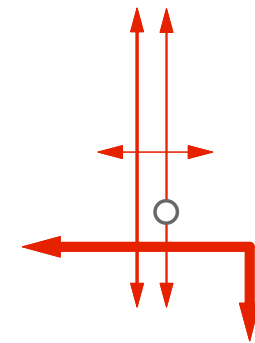
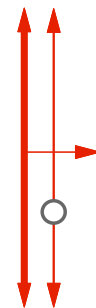
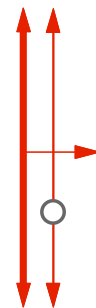
18.5

2000 - 2015

Delft CS is renovated and the train goes underground. The barrier that was formed by the viaduct is cleaned up and the old connections with the inner city are being re-established. The new Delft CS becomes a new hub of activity.



clear functional relationship



confused relationship

DEFINING MOMENT



TOTAL NUMBER OF INHABITANTS - DELFT (01-01-2013)

Within the city of Delft the location falls into the higher catagories with regards to the number of inhabitants.

19.1 - source: GBA



AVERAGE AGE - DELFT (2013)

Within the city of Delft the locations fall into the middle catagories with regards to the average age of the population.

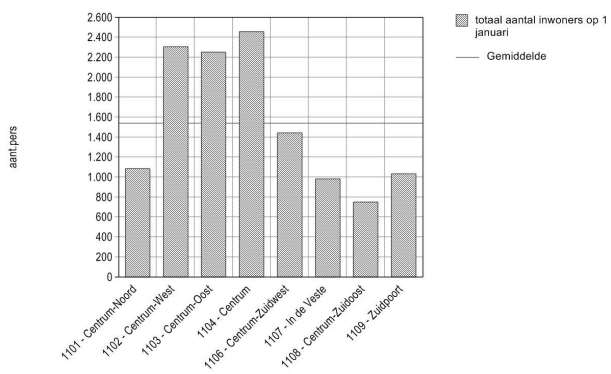
19.3 - source: informationservice council/O&S



DENSITY PER M2 - DELFT (2013)

Within the city of Delft the location falls into the higher catagories with regards to the density of the population.

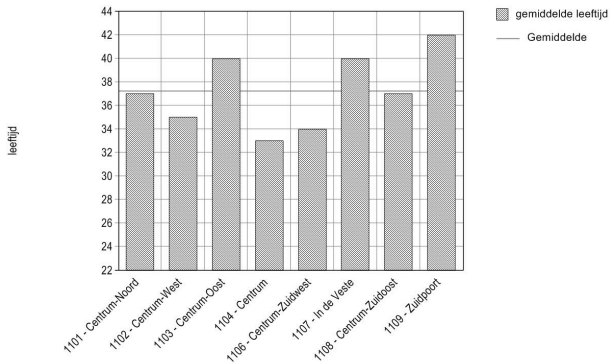
19.5 - source: informationservice council/O&S



TOTAL NUMBER OF INHABITANTS - INNER CITY (01-01-2013)

Within the inner city the highest concentration of inhabitants is in the districts of: Centre-West, Centre-East, and Centre.

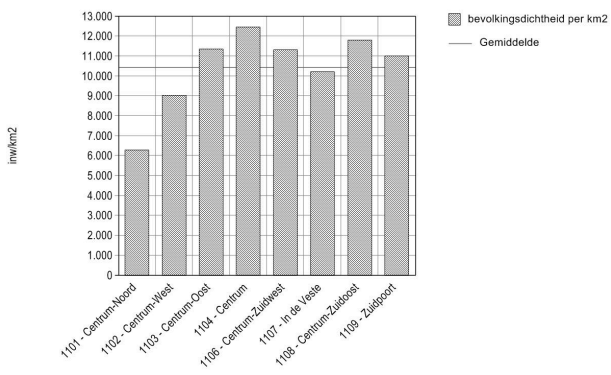
19.2 - source: GBA



AVERAGE AGE - INNER CITY (2013)

Within the inner city the average age is highest in the latest developed areas like the Zuidpoort and In de Veste. The oldest part of the city seems to attract a slightly younger demographic compared to the general average.

19.4 - source: informationservice council/O&S



DENSITY PER M2 - INNER CITY (2013)

Within the inner city the density is high. Mainly in the later developments and the old centre this is above average.

19.6 - source: informationservice council/O&S

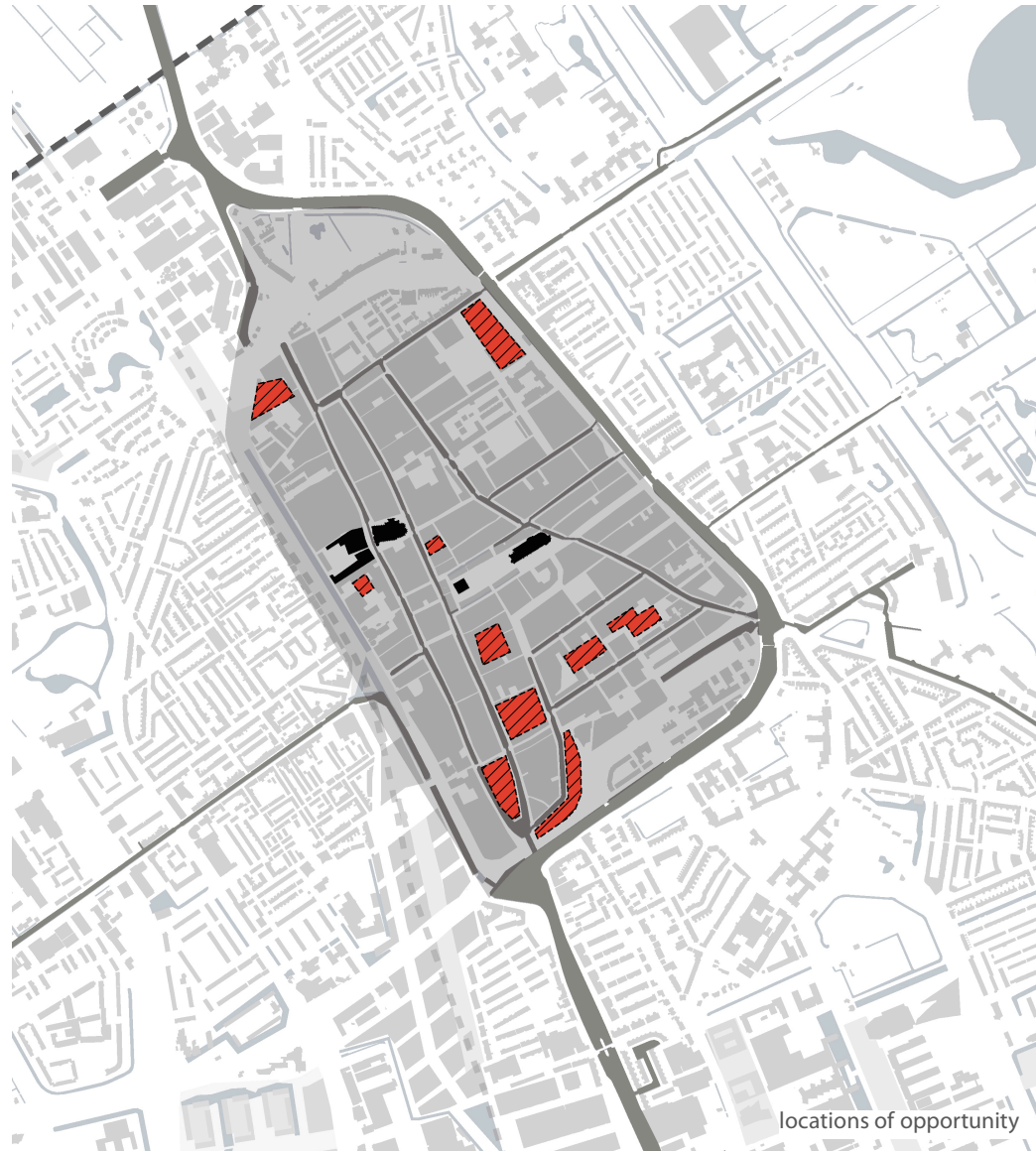
WHAT ARE THE CURRENT EXCISTING PLANS FOR THE FUTURE?

Now that the previous function of the museum for the Royal Dutch Army has moved elsewhere the Armamentarium Complex lies empty, awaiting a new destination within the city of Delft. Because of the recent economical crisis the plans and guidelines from the council have changed compared to previous plans with the main emphasis on creating opportunities. Whereas in the past there were strict plans with predetermined functions for different developmental areas, now these predetermined functions have been loosened. Within the inner city there are several locations of opportunity defined (20.1) where the basic atmosphere acts as a guideline (20.2).

This new direction of the council seems to be one consolidation of existing qualities with no clear ambition for any diverging additions. By not having a clear opinion about what role the locations of opportunity have to play within the city structure the initiative is placed with future developers. On the one hand this can suggest a form of freedom from the perspective of future development, but on the other hand this non-outspoken attitude reveals the difficulty of finding a successful strategy for these locations.

With regards to the location of the Armamentarium Complex, the northern part of the peninsula can be redeveloped as an attractive entrance area. Not just in west-east direction as the council sees it, but also in the north-south direction in order to better connect the peninsula with the rest of the creative canal area (20.2).

The location lies within one of the most densely populated areas of Delft where the average age is lower than the overall average. This means it is very important to maximise the space for future potential users, whilst at the same time giving the entrance areas enough space to breathe in order to function properly. With the inhabitants of the city centre being relatively young, the future function of the ensemble should cater to the needs and wishes of this demographic. Because of its unique location and presence it has the potential to rise above the character of the neighbourhood and start to function additionally as an attractor on the scale of the city.



20.1

VISION INNER CITY OF DELFT (2012)

- The inner city development plan 2012 succeeded the version from 2002 and builds on the previous ambitions in a more sober version because of recent financial developments resulting from the crisis.
- There are no big developments planned for the next term of 10 years, so the plan focusses on the existing situation and is of a consolidating nature. Improve on the existing qualities.
- The character of the inner city is for the most part determined by a vibrant mix of functions. History, living, working, shopping and leisure are the main elements which come together in the historic city centre of Delft.
- The diversity of functions needs to be protected. This is done with a FunctionLimitingSystem, which determines that there has to be a healthy balance between flexibility and protection of heritage. To achieve this the inner city has been divided into various zones of atmosphere.
- To attract visitors and future investors it is not enough to acknowledge the quality of the current inner city. A greater vision is needed for this. With regards to retail this has been done and logged within the report 'Binnenstad, vital en gastvrij; visie en agenda binnenstad 2020'.
- The vision of the council determines the qualities that are currently there and provides the possibilities for future use. What this future use exactly means is up to any future parties.

source: 'Binnenstad 2012,' city council of Delft.



20.2

ATMOSPHERIC ZONES

CENTRE EDGE

Housing with larger commercial functions on streetlevel.

CREATIVE CANAL AREA

Mix of creative industry and housing on all levels.

LIVING

Housing with the occasional small scale business.

SQUARES

Main focus on leisure with distinction per square.

HIGHSTREET SHOPPING

Consumption area with main focus on larger retail suppliers.

ENTRANCE AREAS

A mix of different small scale functions with housing on all levels.

REMARKABLE SHOPPING

Small scale boutique shopping on streetlevel with housing above it.

source: 'Binnenstad 2012,' city council of Delft.



HOW DID THE ENSEMBLE OF THE ARMAMENTARIUM DEVELOP INTO ITS CURRENT ARCHITECTURAL FORM?

After looking at the way the urban situation of the Armamentarium developed, it is important to know how the actual ensemble of the Armamentarium developed alongside this. As discussed previously the urban setting has been heavily influenced by the waterstructure of Delft and its means of transportation. The character of the canal structure it its main elements determine for a large part how the city has been shaped and designed accordingly. The different buildings on the peninsula that make up the ensemble of the Armamentarium has developed though time.

When the first building was constructed in 1602 this was done from a very functional perspective. The location lent itself perfectly for the use of the storage facility and therefore its appearance followed the plot of the existing situation. The reason for the construction in the first place was the on-going war with Spain, which required a more centralised approach when it came to the organisation of military goods. The function of the Armamentarium cemented Delft's political position and the building was erected in the, at that time, fashionable Maniëristic style. After the peace of Munster in 1648 the war with Spain came to an end but this didn't mean the use for the Armamentarium had come to an end. Because of a fire in one of the adjacent northern properties on the peninsula there was a fear the storage facility could get damaged. To prevent this in future several houses were annexed and a guardhouse was erected with adjoining workspace.

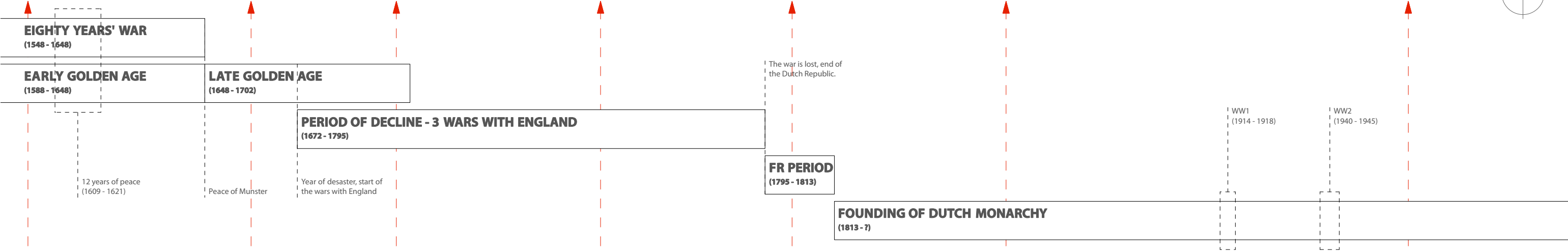
After the year of disaster in 1672 when the Republic lost valuable trading routes along South Africa to England a period of several wars started. The need for expansion of the storage facility led to the enlargement of the Armamentarium Complex. Several more houses on the peninsula were annexed and a large new structure was created. Again closely following the Classicistic trend in warehouse architecture this part of the ensemble stands out in its urban setting because of its sense of scale. During the 18th century the inside of the complex needed a lot of maintenance, which was carried out together with a drastic remodelling of the 1602 building. Again this work is done in the architectural style of the period, which is heavily influenced by the French Louis styles.

A remarkable addition was made to the ensemble around 1802. An old warehouse from the Dutch East India Company (VOC) was added to the complex. This warehouse had already been built in 1653 when the Golden Age was in full swing. The VOC had offices along the Oude Delft, opposite the Armamentarium and with the growing prosperity of the city they also needed more facilities. Two houses were converted into office space with warehouse facilities. Many alterations were done to amalgamate this structure into the one it currently is. At the end of the Golden Age the VOC seized to exist and the property had no clear use anymore. With the need for office space and because it was fortunately situated against the ensemble of the Armamentarium it became part of it.

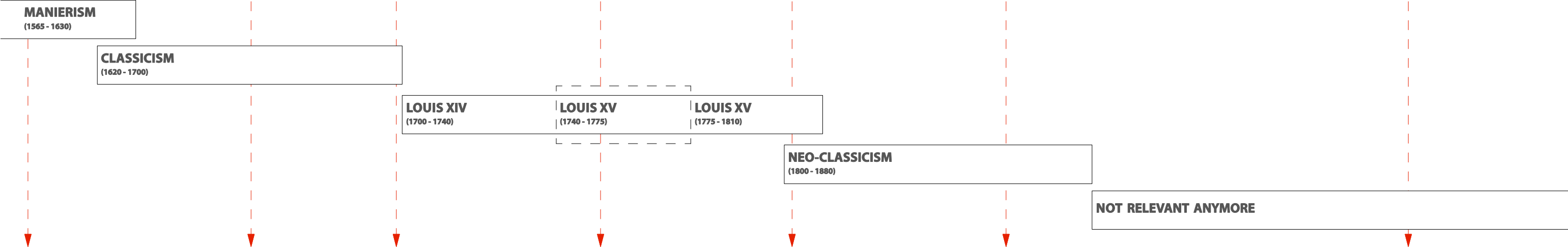
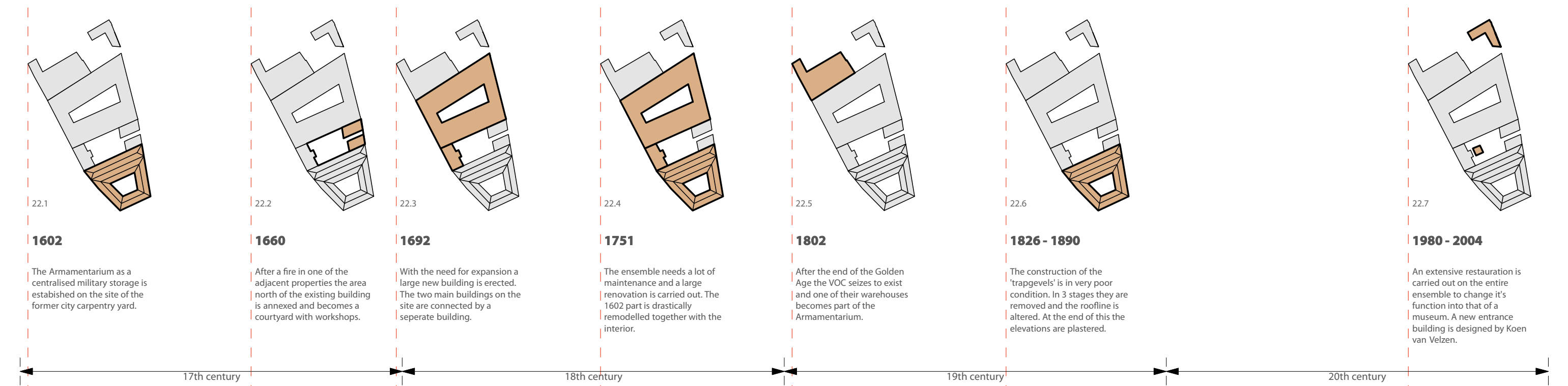
Several maintenance works were carried out to keep the complex in order, of which the remodelling of the outside of the 1602 building in the 19th century was the most noticeable one. In the 20th century small additions were made to cater to the new function as a museum, but this didn't alter the main character of the ensemble.

The way the ensemble developed into is current architectural form is closely related to the functional needs with regards to political developments such as war, but also seemed deemed important enough to be carried out in the architectural styles that were in fashion.

RELEVANT PERIODS IN THE NETHERLANDS



MAIN FUNCTIONAL TRANSTIONS



WHICH ELEMENTS FORM THE ENSEMBLE OF THE ARMAMENTARIUM?

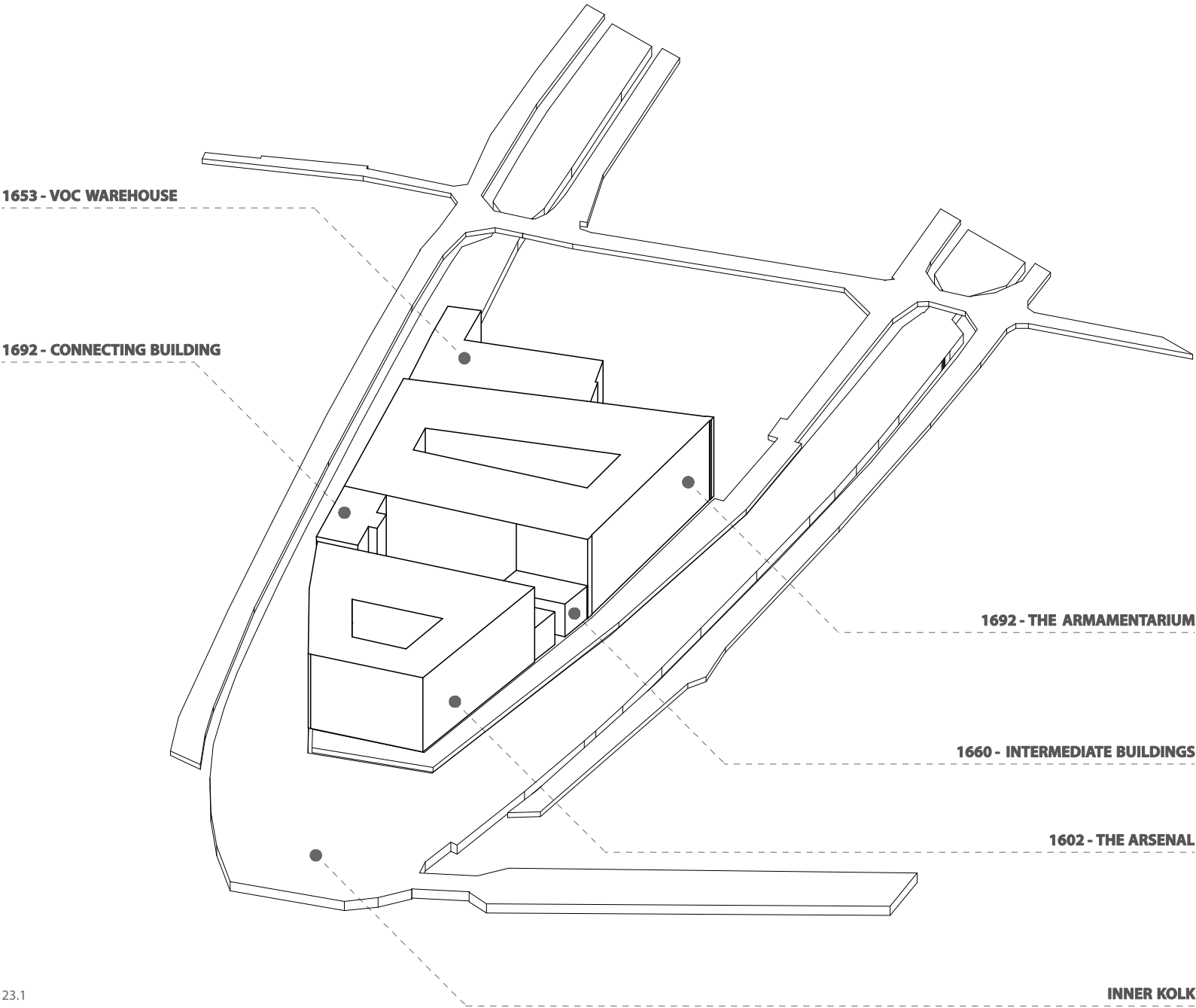
The ensemble of the Armamentarium has grown from the tip of the peninsula inwards through time. With every expansion/transformation there was a clear functional need and the results have been made in architectural expressions that belong to its relevant style period. With a program that is closely linked to the defence of the Dutch Republic through time, combined with an architectural language that closely follows the trend of the country, the ensemble is not only of historical importance but also tells a compelling architectural and technical story.

The complex is built up out of several elements which each have played their own role though time. Even though the ensemble has always functioned as one functional complex, these different elements are clearly distinguished. The two main elements of the complex are made up out of the 1602 Arsenal and the 1692 Armamentarium (23.1, 24.1). Both these structures were built for a clear purpose, the storage of military goods. With the transition into a museum they functioned as the main exhibition spaces. Not only in functional use these two elements stand out, but also in its clear architecture related to function and architectural style.

Between these two main buildings there are two intermediate building, which connects the 1602 Arsenal and the 1692 Armamentarium. The intermediate buildings function as an entrance way into a semi-subscribed inner courtyard (24.3). The southern one is still the original guardhouse whereas the northern one has been transformed through time and has even been rebuilt in the second half on the 20th century. Architecturally they don't add a great deal to the main character of the ensemble, but they reflect the history if the type and size of houses that used to be on the peninsula before they were annexed in order to build the Armamentarium Complex. The connecting building (23.1) has been constructed together with the 1692 Armamentarium building and follows the same architectural style. Purposely understated, this element doesn't disrupt the main structure of the ensemble and because of its sober character doesn't detract from the two main buildings.

The VOC Warehouse (23.1) is functionally part of the ensemble but doesn't claim a leading role architecturally. Because this building was made separately to the Armamentarium it was never intended to become part of it. It was built by converting two structures that used to be there before the 1692 part of the Armamentarium was built. Because of its location and use during the 17th century this building's greatest contribution to the ensemble has been that of defining the northern edge of where to build up to. The size of the 1692 Armamentarium was provided by the width of the plot on the peninsula and the depth in between the intermediate buildings and the VOC Warehouse. Functionally the VOC Warehouse has always had a serving role within the complex (24.2).

The different elements of the ensemble have been linked together in the way they have developed through time. Internally the main infrastructure runs along the western side of the complex whereas the physical infrastructure of the quay and a succession of squares run along the eastern side of the complex. From the original functional purpose of a storage facility of military goods the emphasis on the moving of these goods was on the water. The western and southern edges of the ensemble served this purpose. The transportation of people into the complex and the distribution of smaller goods were situated along the quay on the eastern side of the complex. With the change of the ensemble into a museum the direct physical connection with the water became obsolete and the eastern quay and its succession of squares became more important (24.3, 24.4).

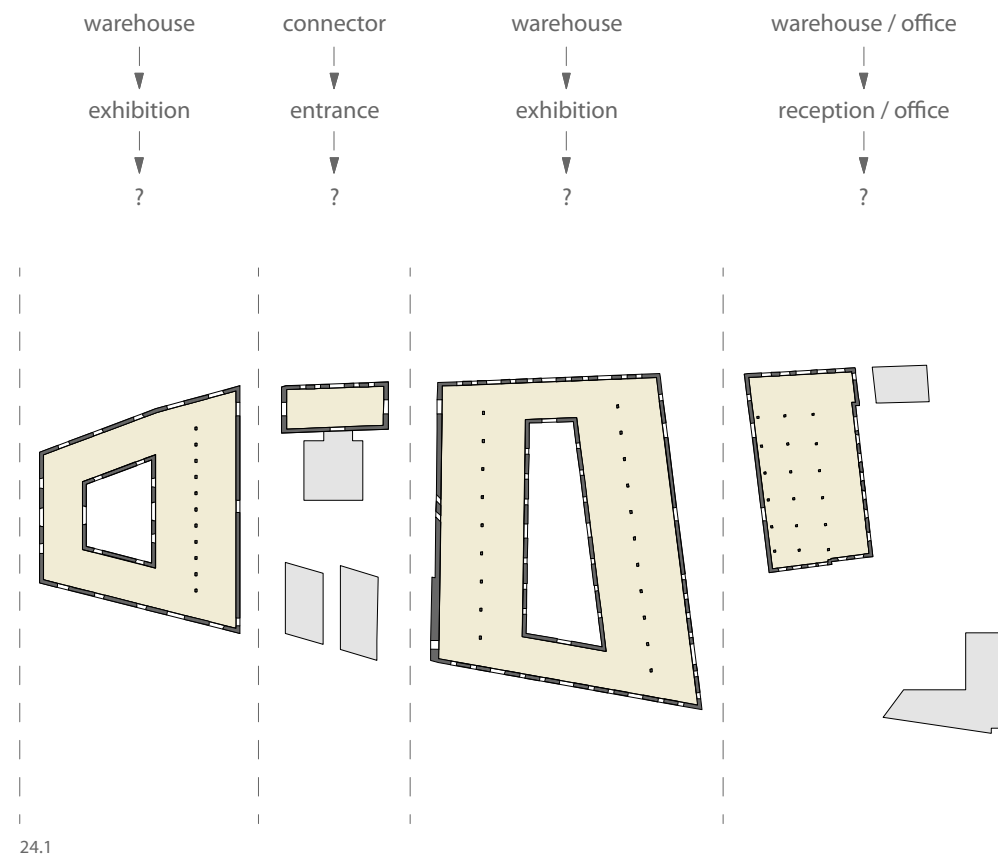


23.2 - aerial foto location, www.topdesigndelft.nl



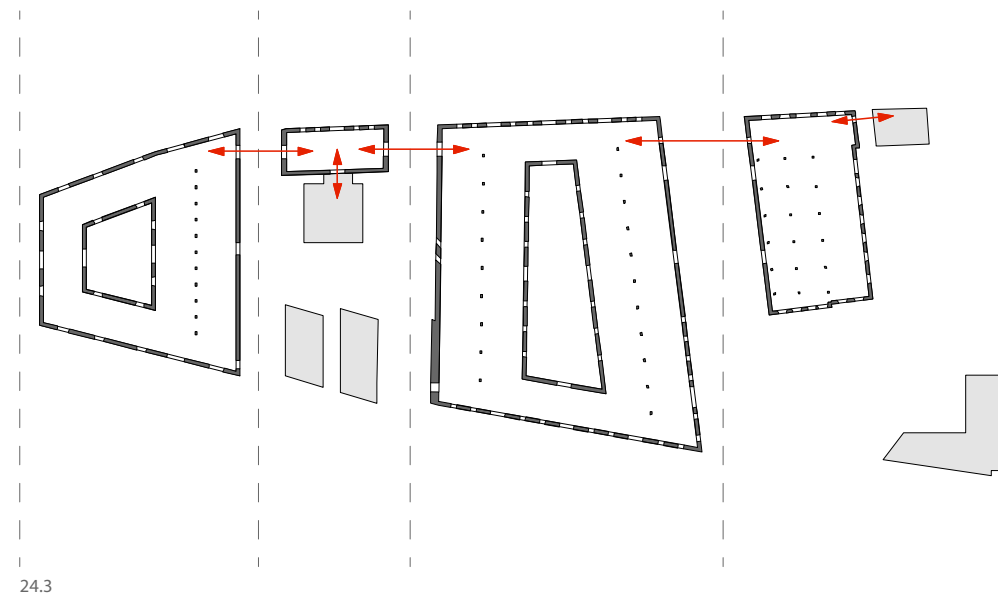
23.3 - temporary stage, www.jeannebouwmeester.nl

Drawings based on CAD drawings produced for 2004 construction of entry building, TU Delft RMIT Blackboard community, Faculty of Architecture.



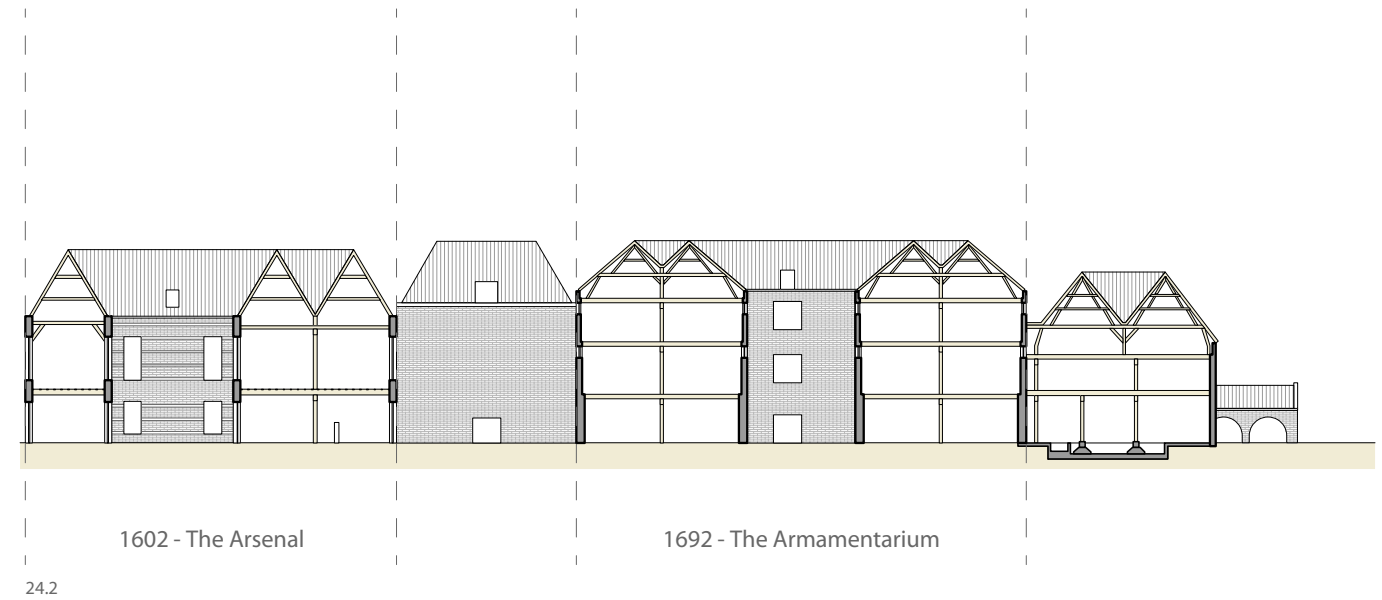
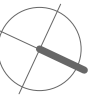
FUNCTIONAL ELEMENTS

Built up out of clear functional elements that have changed though the course of time. The main space for storage were transformed into the main spaces for exhibition. The current future of the different elements in undetermined.



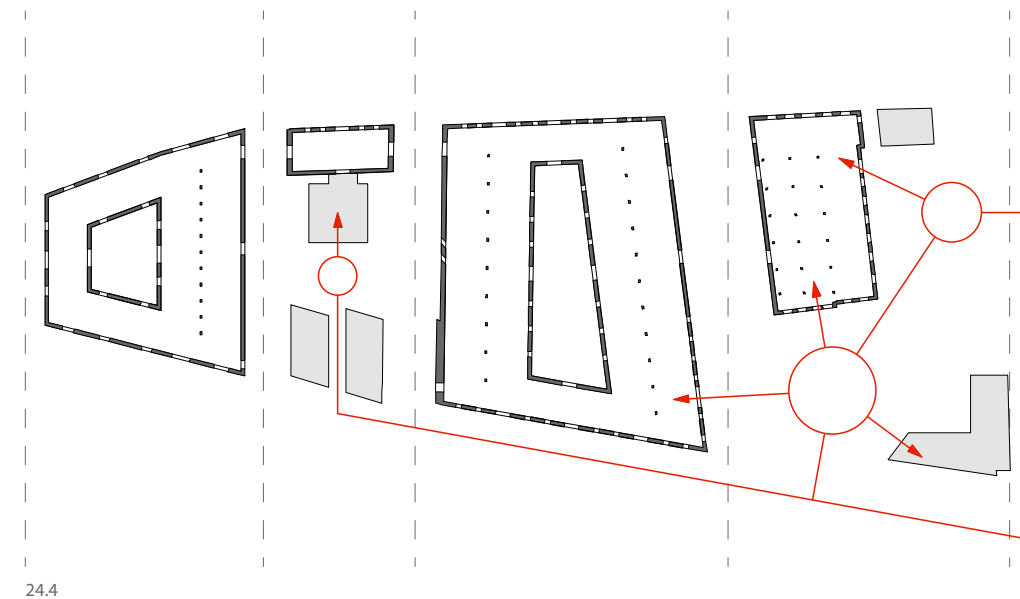
CURRENT PHYSICAL INTERNAL CONNECTIONS

In its current state the physical connections of the complex are mainly internal. Because of the location of numerous doors in the warehouses there is potential for many physical connections in an outwardly direction, these are not utilised at present.



FUNCTIONAL MAIN ELEMENTS

The two main elements of the ensemble are The Arsenal and The Armamentarium. In its functional use they were the centre of the attention as well as in its presence, architecturally and physically.



CURRENT PHYSICAL EXTERNAL CONNECTIONS

There are three main squares that provide a point of entrance. All accessible via the eastern quay that runs along the ensemble they vary in character and appearance. Because the quay is not publically accessible these squares and the quay do not become part of the infrastructure of the inner city and are transitional zones within the complex.

WHAT ARE THE MAIN CHARACTERISTICS OF THE ENSEMBLE?

Because the elements that make up the Armamentarium Complex have mainly been developed throughout the 17th century and have been transformed in later times, this means that there is a variety in style, character and appearance within the ensemble. Whereas the different elements have been built for a specific purpose, the ensemble of the different elements has evolved, instead of carefully being planned from the beginning. This has resulted in seven main transformations through time in were the ensemble has been redefined accordingly (25.1 - 25.7).

This changeable character of the ensemble is one of the main reasons it has been able to stand the test of time and continue to function. The separate elements have been purposely designed for its function and were able to also function separately if possible because of their clear typology. The way they have been combined together within the different scenarios through time required slight adjustments, which haven't interfered with the main character of the most important elements.

The inherent introvert character of the previous two functions that the Armamentarium complex housed, military storage and army museum, have resulted in the fact that the main elements that were changed didn't alter the function of the space massively but did alter the appearance of the actual ensemble (26.3). The way the separate elements within the complex had to function together determined mostly the reasons for the adaptations that were made though time (25.1, 25.2, 25.3, 25.5, 25.7). The second major reason for several of the interventions was the need from a maintenance perspective (25.3, 25.4, 25.6).

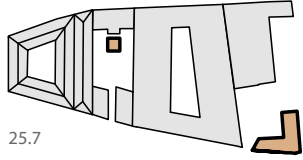
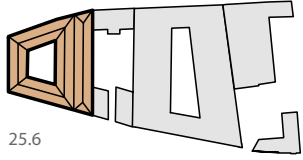
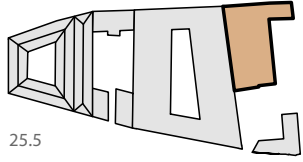
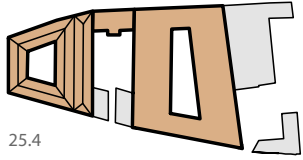
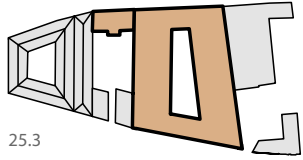
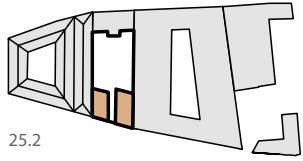
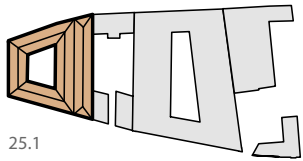
The utilitarian nature of the requirements for a military storage facility means that there are two major qualities such a facility must have: sufficient storage and the ability to access and move the items that are in this storage. In the case of this ensemble this has resulted in two large main storage elements with several serving functions (26.1). These elements were directly accessible from the water via the western and southern side and were accessible via land through the eastern quay and the succession of courtyard spaces. The overall feeling of density is high because of the scale and architecture of the main elements. The actual density is less then its direct surroundings, mainly because of the requirement to be able to move goods around and do work/maintenance on them (25.8, 25.9).

The ensemble gets its focus towards the southern side of the peninsula because of the urban situation and the relation with the waterstructure and the inner Kolk. Within the ensemble the two main storage areas determine focus and direction. The introvert and rather private character of the previous two functions means that the inner space of the elements of the ensemble remains visually restrained with its direct surroundings. The ensemble has a strong presence within its urban setting, but because of its previous function it is disconnected with the vibrant character of the inner city.

Drawings 25.1 - 25.7 based on digital maps of the current situation, TU Delft Map Room, Faculty of Architecture.

Drawings 25.8 & 25.9 based on CAD drawings produced for 2004 construction of entry building, TU Delft RMIT Blackboard community, Faculty of Architecture.

CHANGEABLE CHARACTER OF THE ENSEMBLE THROUGH TIME



1602
Singular storage facility with clear focus towards the southern edge of the plot.

1660
The building becomes a two sided complex with a clear southern front and a serving back.

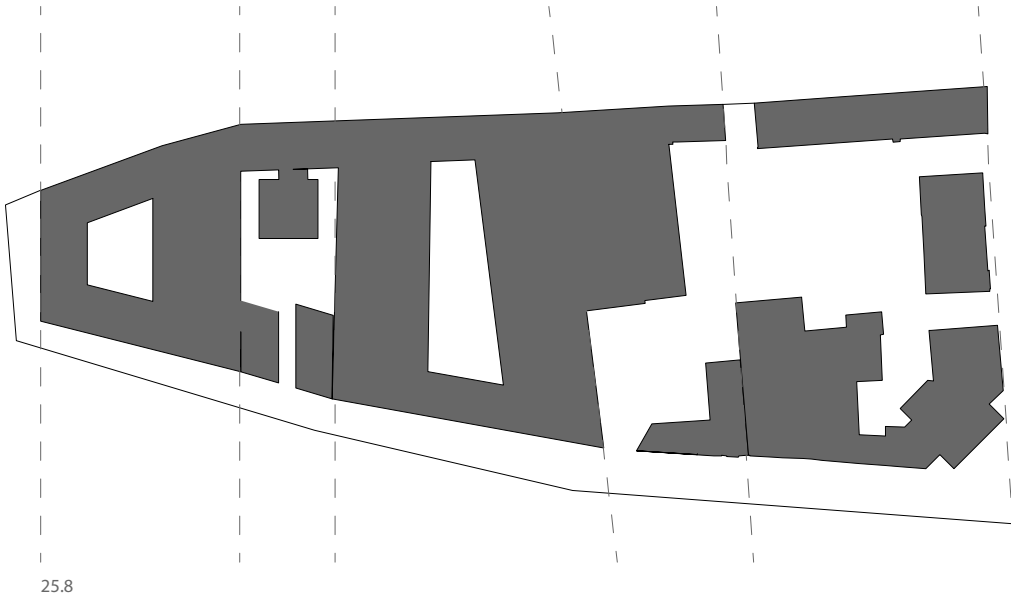
1692
The complex is expanded and becomes balanced with two main parts and an intermediate service zone.

1751
The ensemble is transformed internally and the 1602 part becomes more significant with an upgraded interior space.

1802
The complex takes over the adjacent VOC Warehouse and becomes muddled.

1826 - 1890
The main visual element of the ensemble is transformed with a new roofline and plastered exterior.

1980 - 2004
The change of function change the use of the courtyards, the ensemble becomes more introvert.



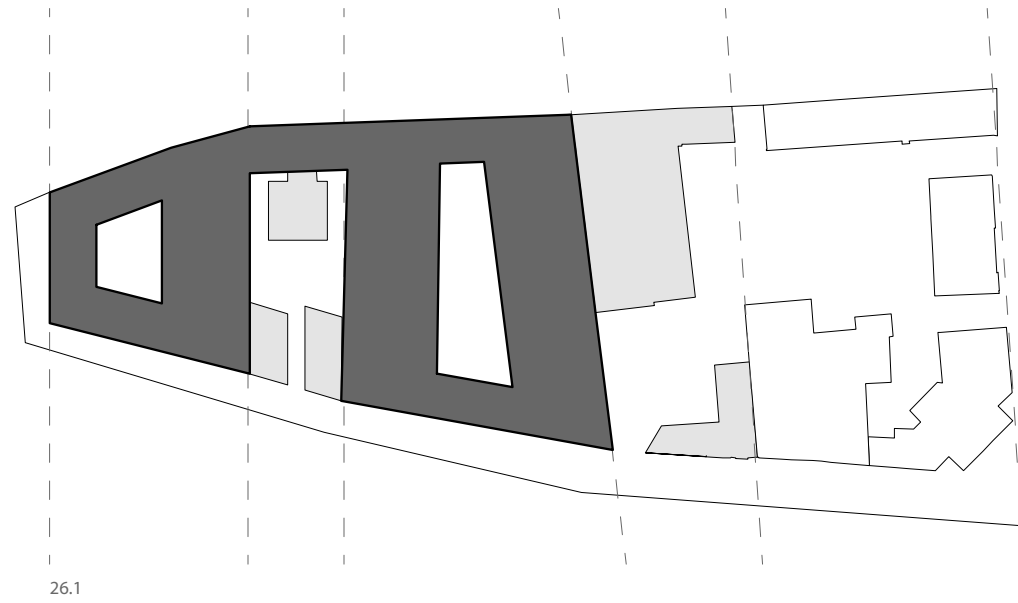
BUILT AREA OF THE PENINSULA - 59 %

The built area of the peninsula is 59 % and consists of two large volumes and two separate building blocks. The architecture and scale of the different buildings demand attention within the urban fabric, the fact that this is only 59 % of the peninsula is surprisingly low.



UNBUILT AREA OF THE PENINSULA - 41 %

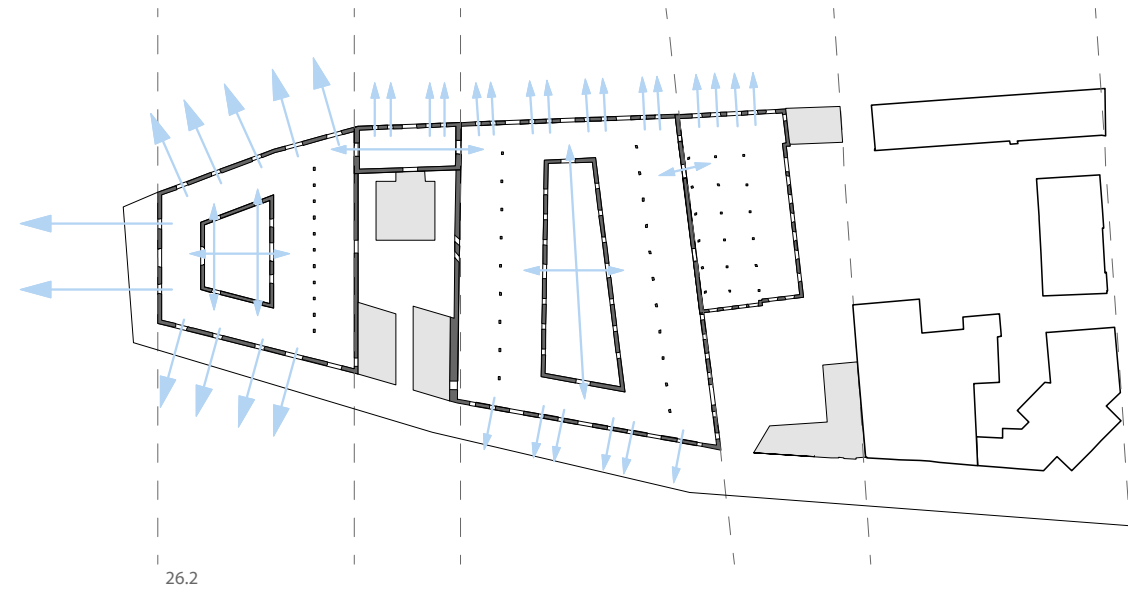
The unbuilt area of the peninsula is 41% and is a succession of semi-public and private spaces. Interconnected through the southern quay they currently lack cohesion and are not part of the open infrastructure of the historic inner city. Because of the scale and presence of the ensemble on the peninsula this amount of unbuilt area is surprisingly high.



26.1

ARTICULATION WITHIN THE ENSEMBLE AND THE PENINSULA

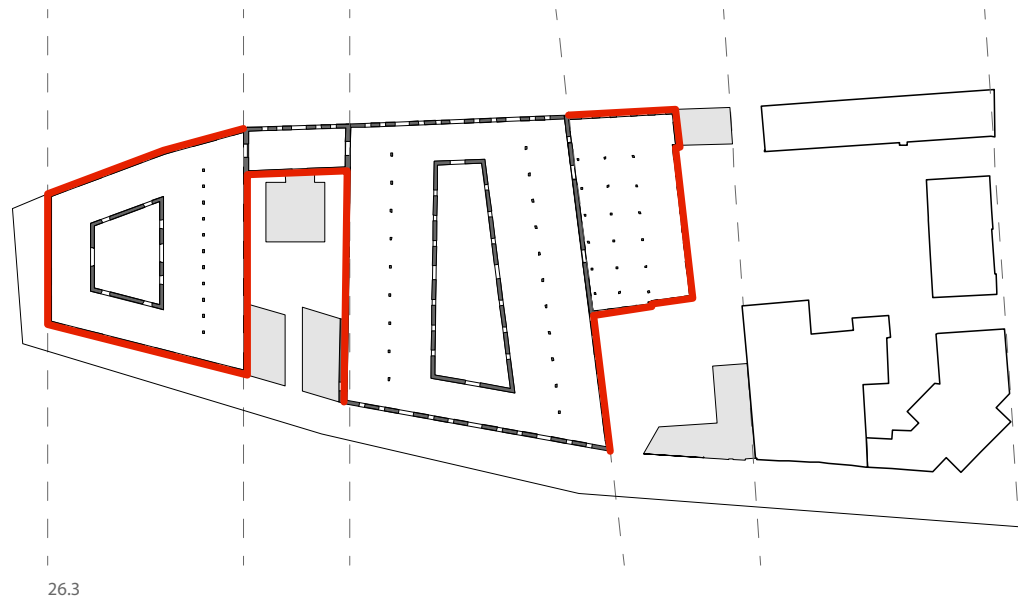
The built area can be divided into three main categories: main elements of the Armamentarium, service buildings of the Armamentarium, functions that do not belong to the Armamentarium.



26.2

VISUAL RELATIONS

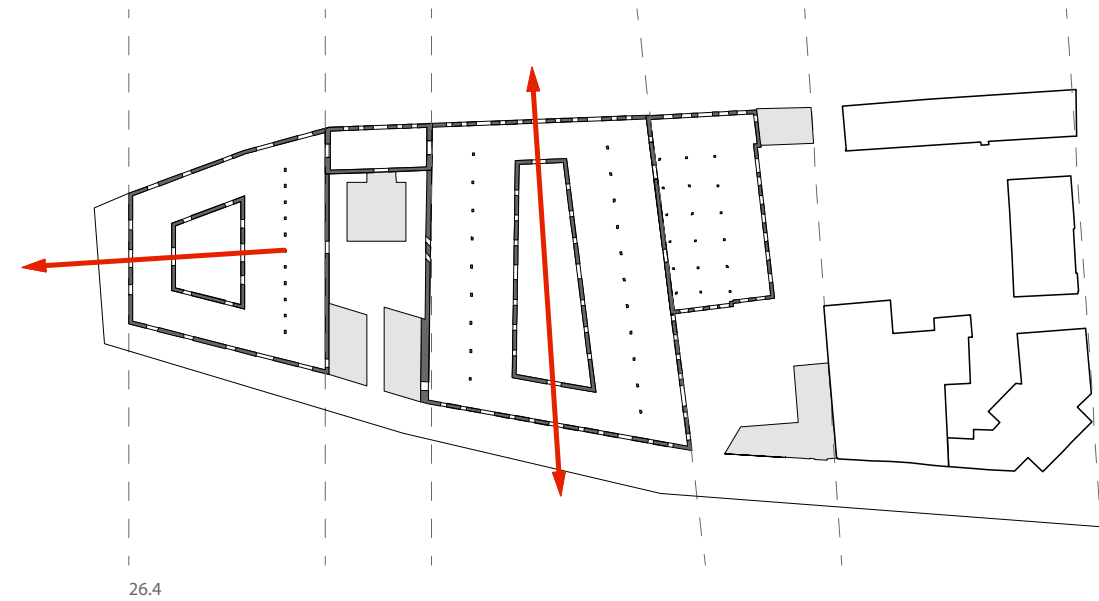
The visual relations of the main elements of the Armamentarium are strong from the inside out. Because of its scale and distance the urban surroundings are noticeable from within the complex with the main emphasis on the 1st floor of the Arsenal. Both inner courtyards provide a reflective relation, which is mainly visual instead of physical.



26.3

CHANGEABLE ELEMENTS OF THE ENSEMBLE

The elements of the ensemble which have been transformed mostly are found within the shell. Because of this the transformations have been very visible in the outward presence of the ensemble, whilst the actual structure of the separate elements have stayed relatively unharmed and unchanged.



26.4

ORIENTATION

The main orientation of the ensemble is determined by its two main structures: The Arsenal and the Armamentarium. Because of their original function they have a clear direction which is followed by the structure and the architecture. It gives the complex a strong presence towards the Kolk and clear definition towards the canals.

1602 - THE ARSENAL

The Arsenal is one of the two main buildings of the ensemble of the Armamentarium. Built in 1602 it has seen many alterations through different scales. Today plastered white it is still the main point of reference of the ensemble today. Architecturally it falls under the Renaissance style, Manierism to be more specific.

MANIERISM (1565 - 1630)

Originated in Antwerp following the early renaissance in Italy. Antwerp was taken by the Spanish in 1585 and by cutting off trade along the Schelde, trade and industry moved north towards Amsterdam. The architectural style of the stonemasons came with them.

Characterisation in the 1602 building:

- individual interpretation of classical patterns/motieves.
- brick elevations with horizontal layers of natural stone.
- gable ending as 'trapgevel', smaller than Gothic architecture and finished with natural stone.
- use of Bentheimer sandstone which was typical for this time.

Transformations through time:

- 1602 - construction.
- 1692 - minor alterations to connect to 1692 building.
- 'spinnenkopramen above doors'.
- 1751 - extensive renewal construction.
- removal second floor.
- expressive exterior elements.
- sash windows.
- 4 windows in north elevation 1st floor.
- 1826 - removal 'trapgevel' western elevation.
- 1839 - removal 'trapgevel' eastern elevation.
- 1860-90 - removal 'trapgevel' southern elevation.
- construction Flemish gable top.
- elevations plastered, windows ground floor changed.

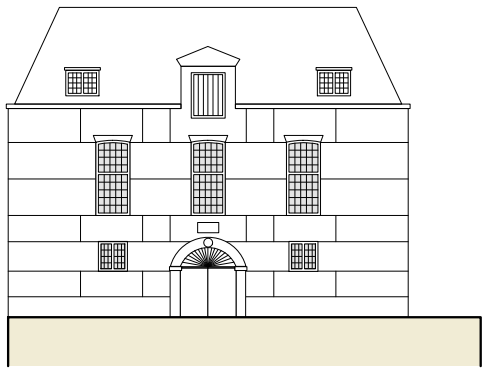


Images 28.1 - 28.4 - source: lecture W. Patijn, www.beeldbank.cultureelerfgoed.nl

WHAT ARE THE MAIN CHARACTERISTICS OF THE 1602 ARSENAL?

After determining the development of the urban location and the actual ensemble of the Armamentarium it seems that there are two main elements within the complex that define its character, not only in architecture but also in volume and scale. The 1602 Arsenal is one of these two. Gaining understanding of the characteristics of the typological elements of this part of the complex makes it possible to understand its own functional role, but also the part it plays within the ensemble itself.

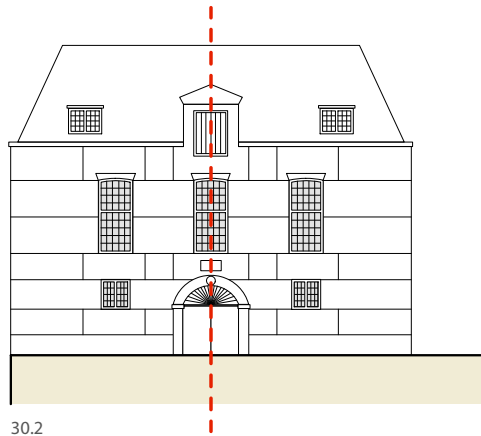
The 1602 Arsenal is a clearly defined structure. The monumental presence of the architecture and situation stands out and the typology of courtyard and warehouse are the result of the utilitarian requirements of its program. These main characteristics have not been lost during the alterations in the past and the current white exterior of the outside elevations enhances the monumental quality of the building within the ensemble.



30.1

DEFINITION

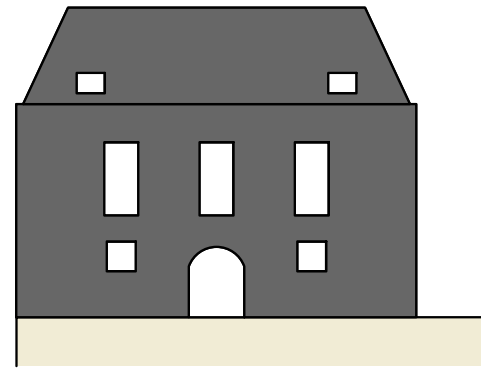
Clear example of Manieristic warehouse.
Transformation though time hasn't killed the inherent architectural distinction.



30.2

SYMMETRY

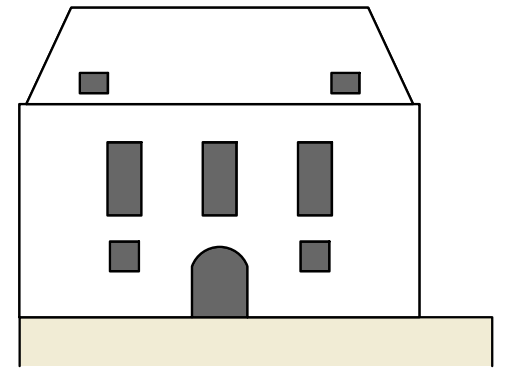
Perfect symmetry in the main elevation, because the trapezoid shape of the floorplan follows the plot, there is near symmetry in the rest of the building.



30.3

TRANSPARENCY

Only 18% of the most representative elevation is open.



30.4

CHARACTERISATION

Because of its relatively closed elevations and monumental positioning the Arsenal gives a very extrovert character to the ensemble.
Because of its white plastered outside however this is not imposing.

TPOLOGY

The Arsenal can be divided into three main typological characterisations:

A - MONUMENTAL PRESENCE

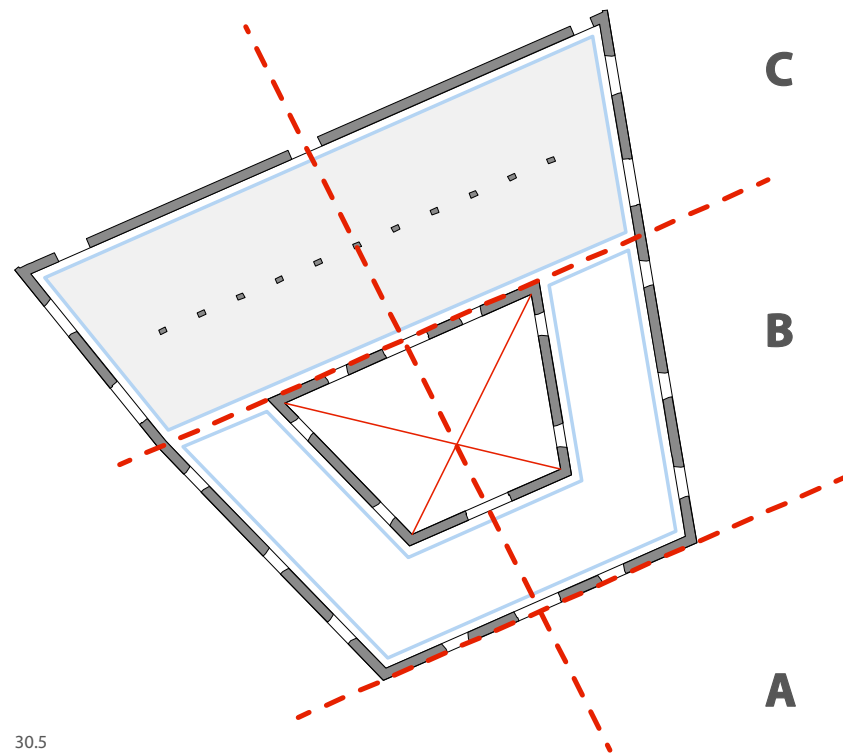
Because of the location and symmetrical architectural language of the main elevation, this part gives the ensemble a monumental value that is closely linked to the urban situation.

B - COURTYARD TYPOLOGY

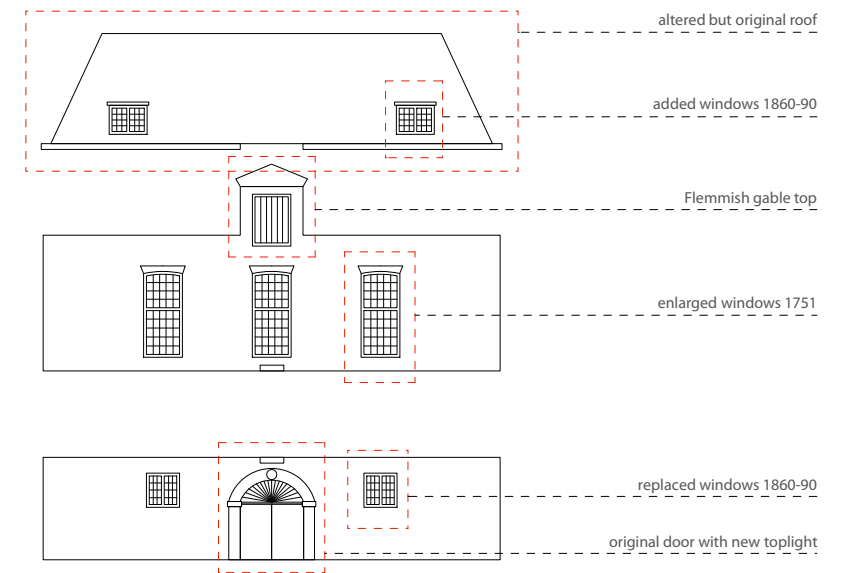
From a funtional point of view of the initial demand for the moving of goods and distribution, a courtyard typology facilitates this.

C - WAREHOUSE TYPOLOGY

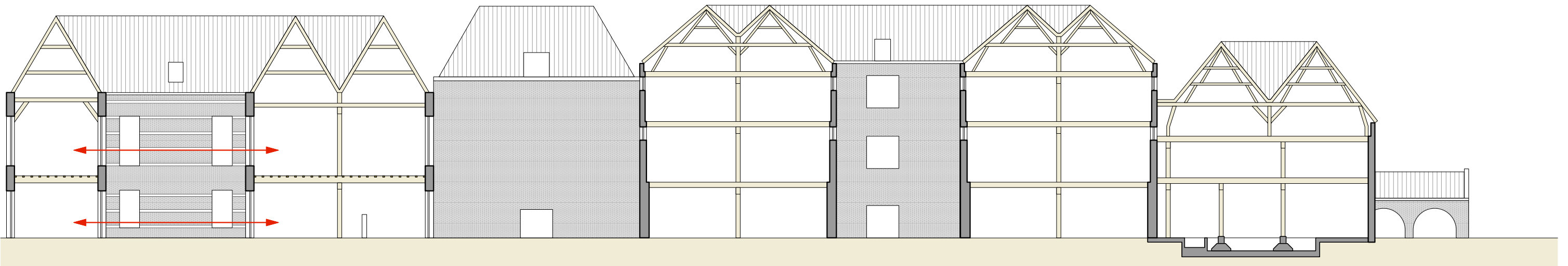
For the actual purpose of the building the structure dictates the use, something which is very visible in the utilitarian architecture of the main storage areas.



30.5

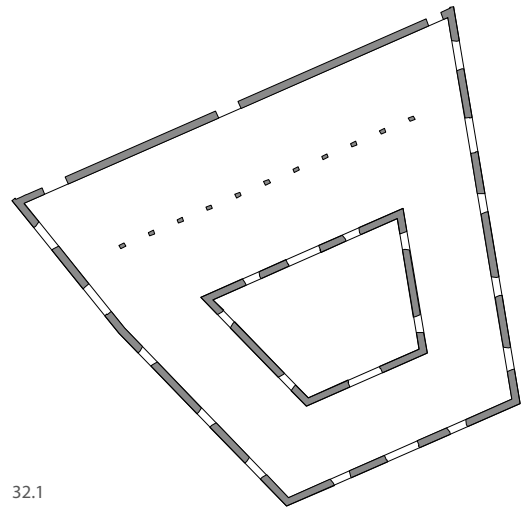


30.6



30.7

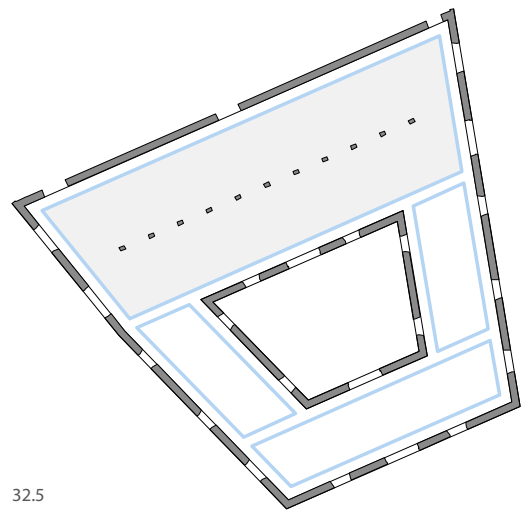
1602 - THE ARSENAL // strong inner visual relationships.



32.1

DIMENSION

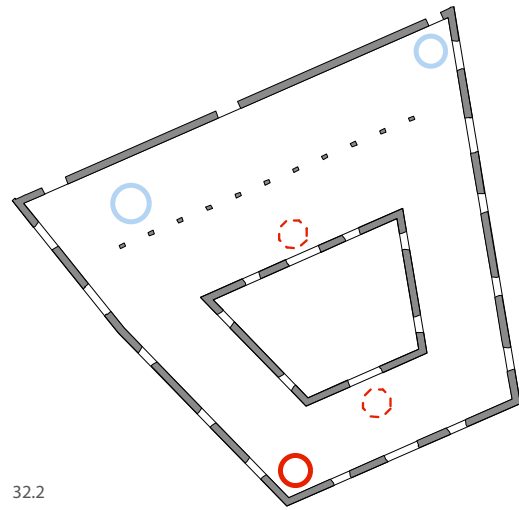
The dimensions are determined by the plot. The slight bend in the eastern elevation is an indication of this. The ratio of the outer elevations is 1:2:2:2, whereas the ratio of the inner elevations is 1:2:2:3. This variation of ratio comes from the trapezoid shape of the building.



32.5

ZONING

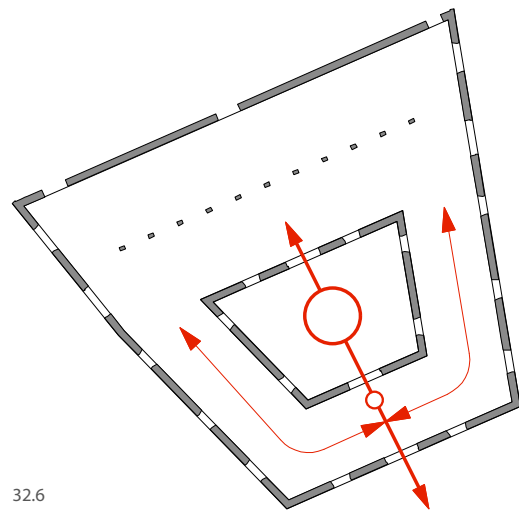
There is a articulated sense of zoning, which comes from the utilitarian nature of the building. The emphasis lies on the main storage area with the courtyard surrounded by three zones. This is further emphasised by the constructional portals which give definition to this zoning principle.



32.2

TRANSPORTATION

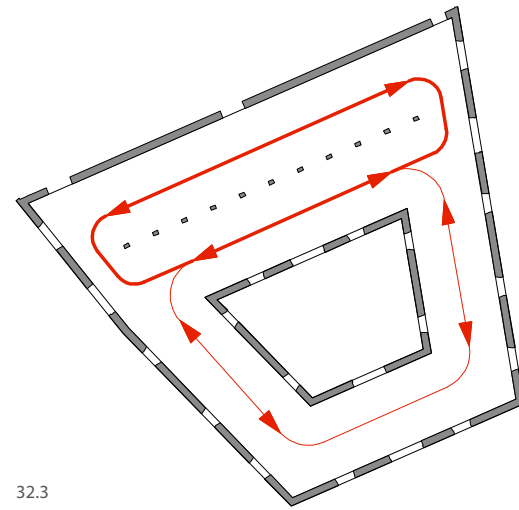
There is a division between the transportation of people and the transportation of goods. From the original oak staircases, which were positioned in every corner, only one is left. Two new staircases are added later, something that is visible in the typology and materialisation: from oak winding stairs to pine and steel stairs with landings. The vertical transportation of goods went by means of hoists through hatches in the floor. Remnants are still visible in the floors.



32.6

ORGANISATION

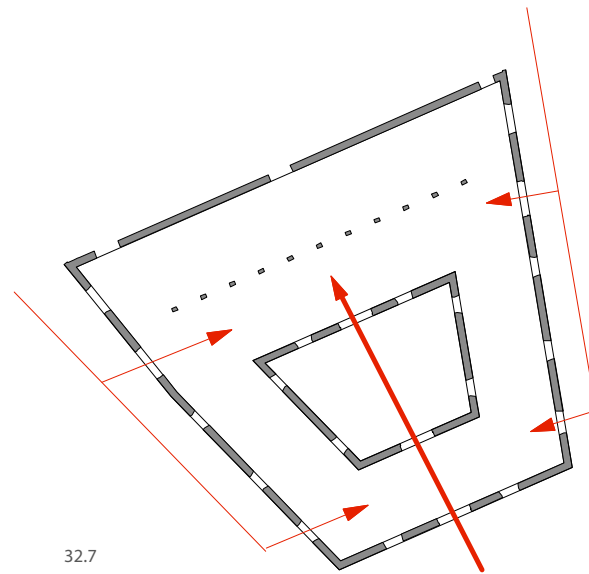
The typological organisation is the building is again defined by the utilitarian nature of the program. With the main entrance on the monumental southern elevation the heart of the building is the courtyard. The displacement of goods and people runs directly through this which makes this part a point of distribution, whereas secondary smaller items can be serviced through the zone which runs around the courtyard.



32.3

ROUTING

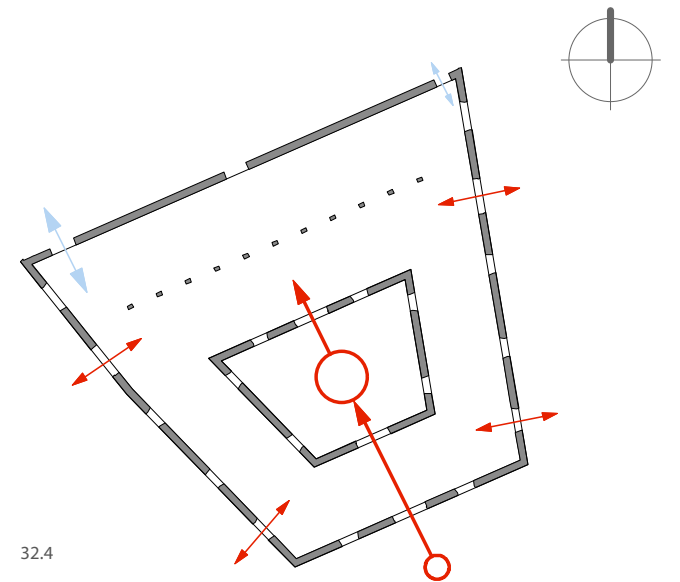
The originally intended routing of the building is one with a cyclic character. The solution with regards to routing comes from a strong functional program of the storage of goods and the ability to transport this through the building in an effective manner. The emphasis lies on the northern larger storage part because of its scale and functional articulation within the floorplan. Currently this is also the point of entrance into this part of the ensemble.



32.7

APPROACH

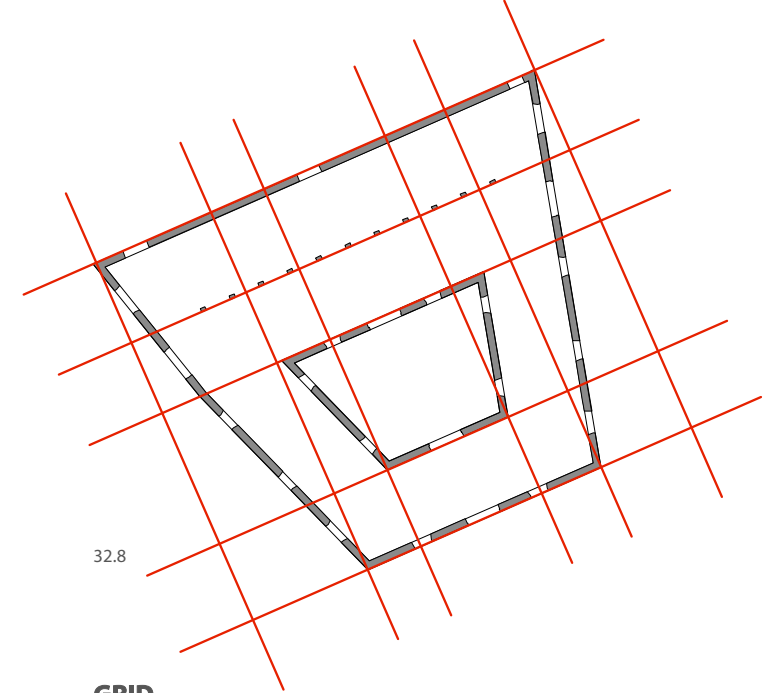
The approach towards the building is two-fold: from the front or from the side. Monumental and symmetrical from the front with the sense of destination. With clear emphasis on the warehouse from the side with the sense of transition.



32.4

TRANSITION

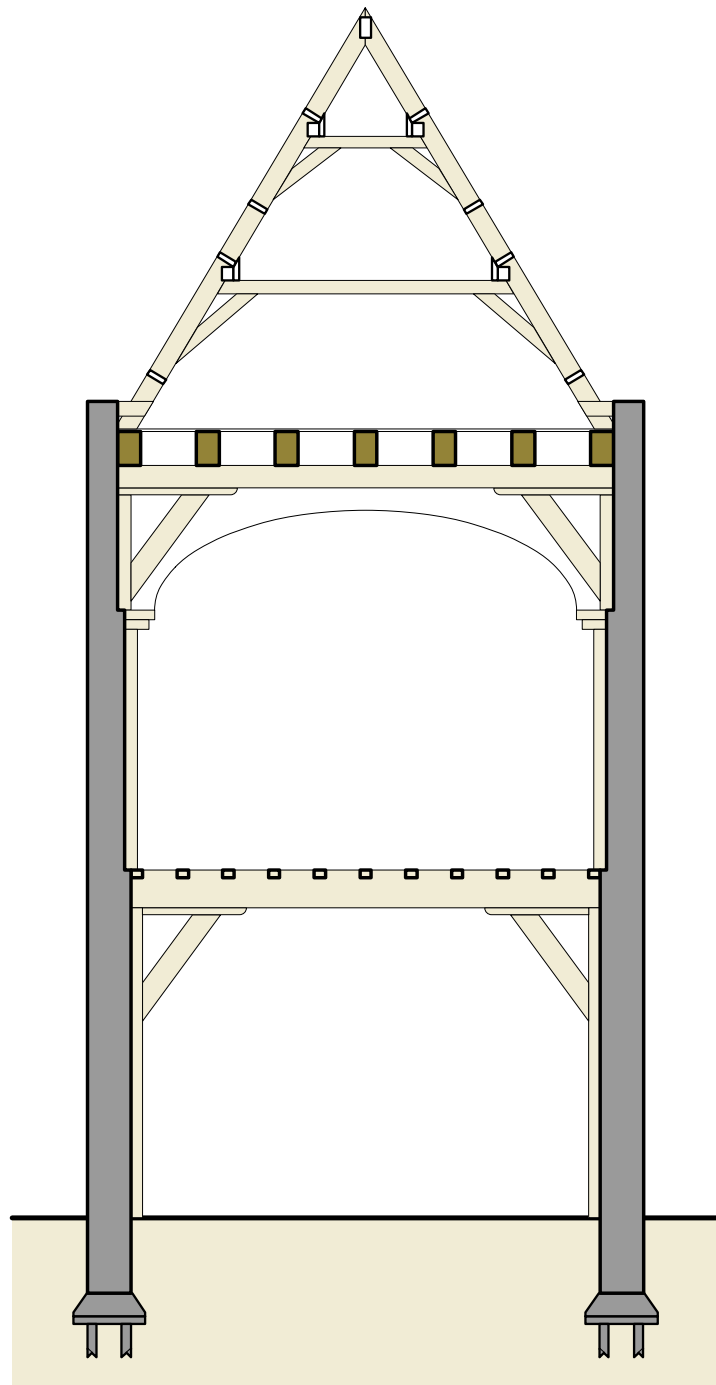
The transition through the building is strongly linked to its original function. The main transition into the building follows the axis of symmetry and finds its centre in the inner courtyard. From this typology it shifts to the wings. The transition into the rest of the complex is through the northern elevation and not very obtrusive.



32.8

GRID

When a basic grid is introduced the near symmetry of the structure becomes readable. In west-easterly direction there is almost perfect symmetry, whilst in north-southern direction the off centre position of the courtyard is visible. The position of the courtyard towards the main entrance enhances the importance of entry. The larger physical storage space enhances the importance of its function.

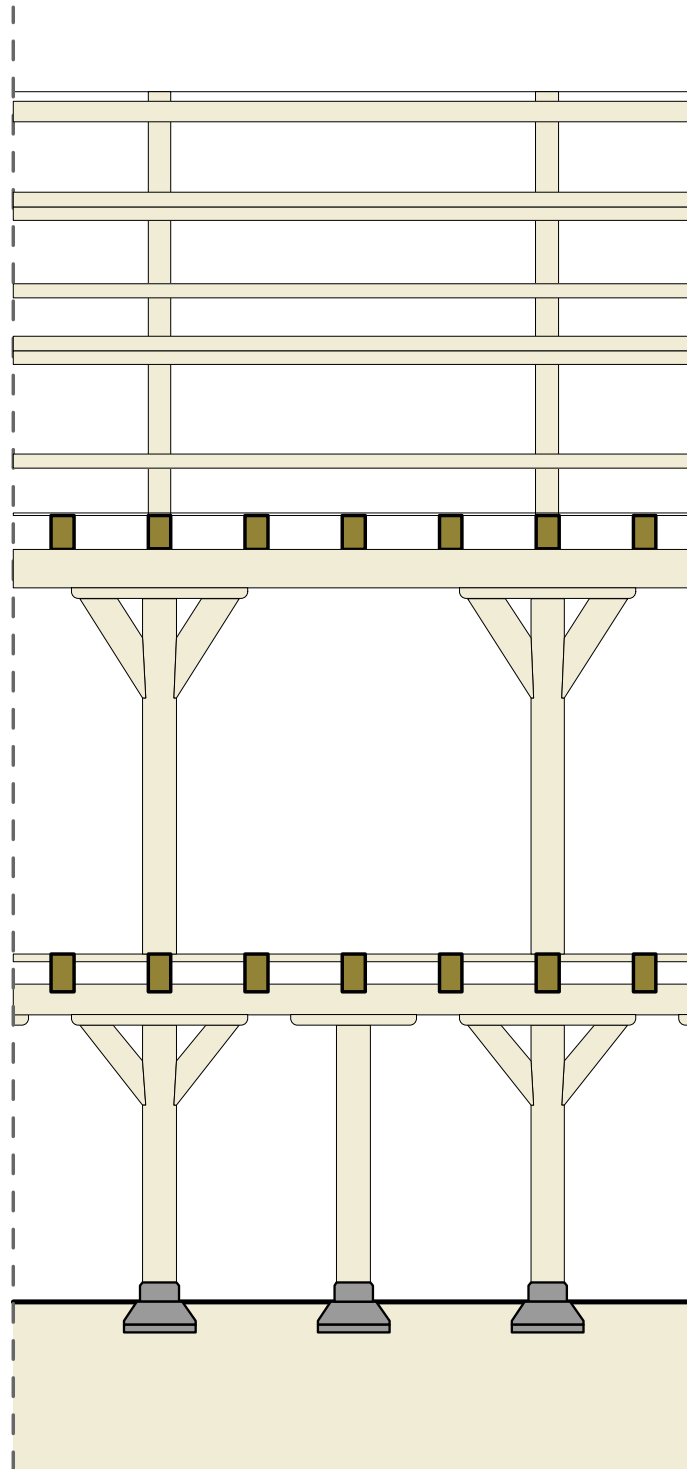


34.1

CONSTRUCTION PRINCIPLES

The principles of the construction are clearly divided into key elements: the main load bearing structure, additional elements, beam structure and roof structure.

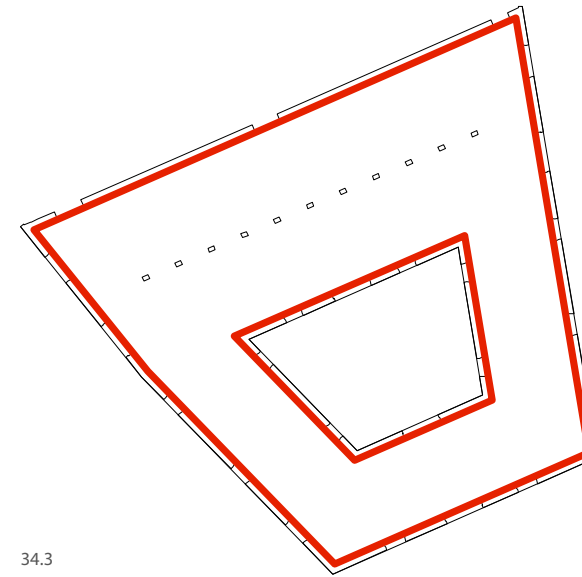
The main construction has a masonry main load bearing structure with wooden additional elements, floors and roof structure. Altered through time the original principle of construction is still visible on the ground floor. The rest of the building has a different wooden structure which was realised in the 1751 transformations. The roof structure is still original and clearly marked by the carpenters who built it.



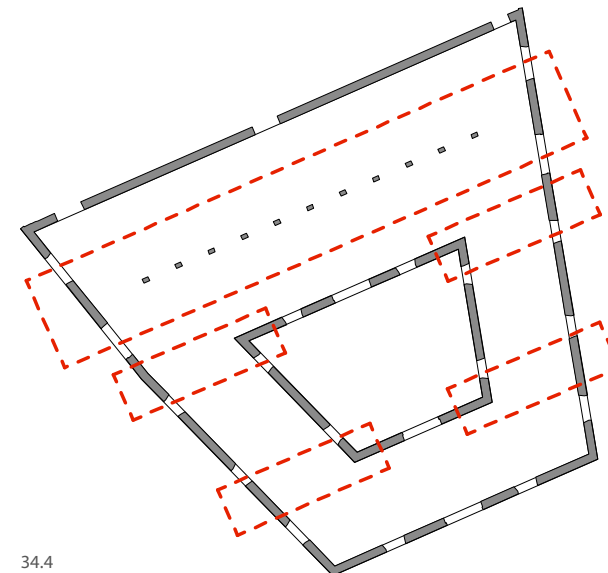
34.2



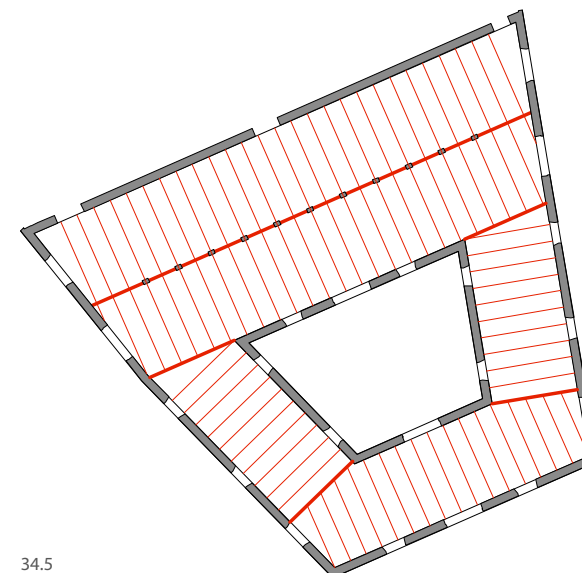
34.6 - source: Author



34.3



34.4



34.5



LOAD BEARING WALLS

Solid masonry walls with sandstone accents. They make up the main form of the building and follow the plot. On the western side they are positioned directly in the water, on the eastern side they are positioned along a quay.

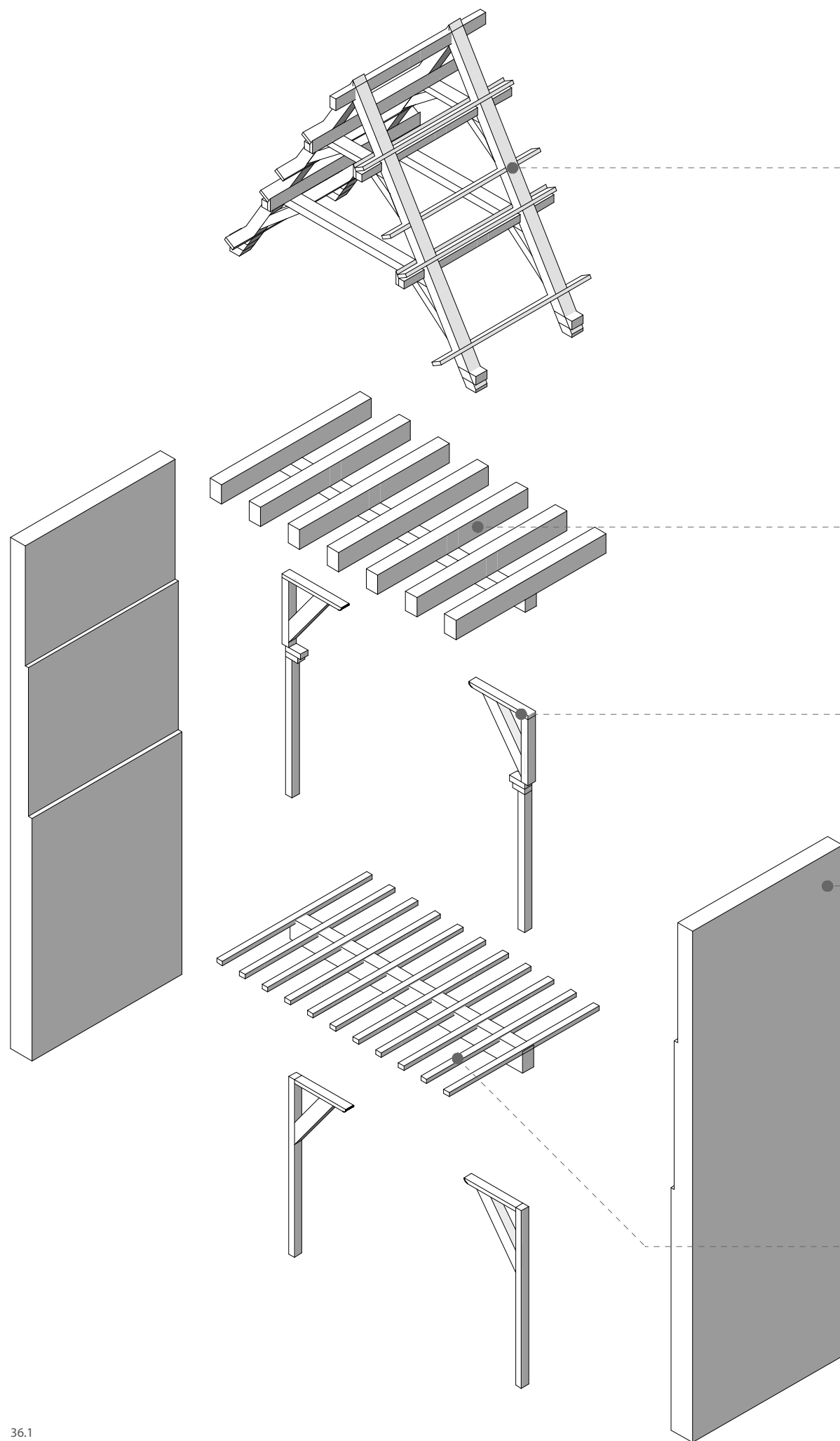
ADDITIONAL LOAD BEARING ELEMENTS

Next to the main masonry structure of the building there are additional key elements. A row of columns (standvinken) play a big role in the typology of the warehouse, which dimensions are determined by the possible span of the original date of construction.

Four portals are added in order to create the openness of the courtyard typology.

BEAM STRUCTURE

The beam structure is a direct result of the positioning of the main elements of the construction. On the ground floor still original in its appearance with motherbeams and childbeams. On the other floors typical of the later means of construction without childbeams.



36.1

ROOF CONSTRUCTION

The roof construction is still the original from 1602 and is made from oak. Alterations have been made through time using pine wood. An extra layer of wooden boards has been added underneath the roof tiles.



36.2 - source: Demarcatie rapport Armamentarium

FLOOR CONSTRUCTION

The floor construction of the roofspace has been completely renewed in 1751 using pine wood. It consists of 'moerbalken' on which the floorboards are placed directly. Sometimes an 'onderslagbalk' is used to create a portal.



36.3 - source: Author

ADDITIONAL SUPPORT STRUCTURE

Depending on the location, added support structures are put in place. Where they are not the beams rest on the walls through a console.



36.4 - source: Author

WALL CONSTRUCTION

The wall construction is made up out of solid masonry. Plastered as well on the inside, as well as on the outside, they become slimmer each floor up. This is clearly shown on the first floor where during the alterations of 1751 one floor was taken out.

FLOOR CONSTRUCTION

The floor construction on the ground floor is partly original and has been made out of oak. Later alterations using pine are visible. The main structure is built up out of 'moerbalken' with 'kinderbalken'. On top of these are the wooden floorboards. Sometimes there is also an extra 'onderslagbalk'.



36.5 - source: Author

1692 - THE ARMAMENTARIUM

The Armamentarium one of the two main buildings of the ensemble of the Armamentarium. Built in 1692 it has seen alterations through time which have been relatively unobtrusive. Still in its original appearance it is a perfect example of Classisistic warehouse architecture.

CLASSICISM (1620 - 1700)

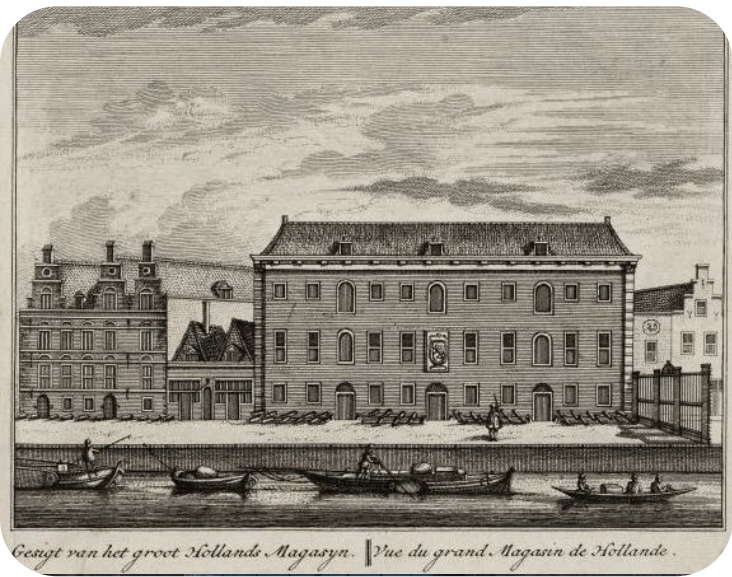
A re-appreciation of classical architecture where the second half can be characterised as clean and without pillasters. A more strict and pure way of applying classical form with a simpler main form with fewer decorations. The Gothic era is at this stage truly in the past. Symmetry, dimension and proportion are main themes.

Characterisation in the 1692 building:

- natural stone base with brickwork and slanted roof; base, middle, top.
- dakschilden and sash-windows are typological features.
- emphasis on the corners with decoration only above key entrances.
- roofconstruction with 'Keulse goot', water via an internal route to the outside HWA.

Transformations through time:

- | | |
|------|-----------------------------------|
| 1692 | - construction |
| 1751 | - extensive renewal construction. |
| | - changing of doors |
| | - adding of 'spinnekoprmen |
| | - sash windows. |

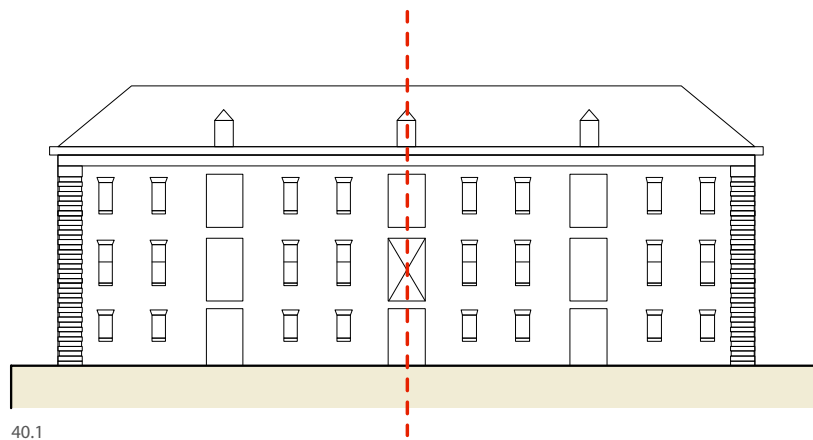


Images 38.1 - 38.4 - source: lecture W. Patijn, www.beeldbank.cultureelerfgoed.nl

WHAT ARE THE MAIN CHARACTERISTICS OF THE 1692 ARMAMENTARIUM?

After determining the development of the urban location and the actual ensemble of the Armamentarium it seems that there are two main elements within the complex that define its character, not only in architecture but also in volume and scale. The 1692 Armamentarium is one of these two. Gaining understanding of the characteristics of the typological elements of this part of the complex makes it possible to understand its own functional role, but also the part it plays within the ensemble itself.

The 1692 Armamentarium has a strong division between the west-east presence and the north-south presence. Very monumental and readable in the west and south elevation, whilst unremarkable and undefined in the north and south elevation. The monumental presence of the warehouse typology in its classical architectural style is clear and gives focus. The main characteristics of the defining elevations remain intact; they have not been significantly altered through time. The north and south elevations on the other hand have seen significant change and are part of the changeable character of the ensemble. Because of these transformation this main element of the complex and been redefined according to its use in the past.



DEFINITION & SYMMETRY

Clear example of Classisistic warehouse. The inner transformations have mainly effected the two secondary elevations, the main representative elevations are unaffected. The architecture is emphasized by its size and use of symmetry and proportions.

TPOLOGY

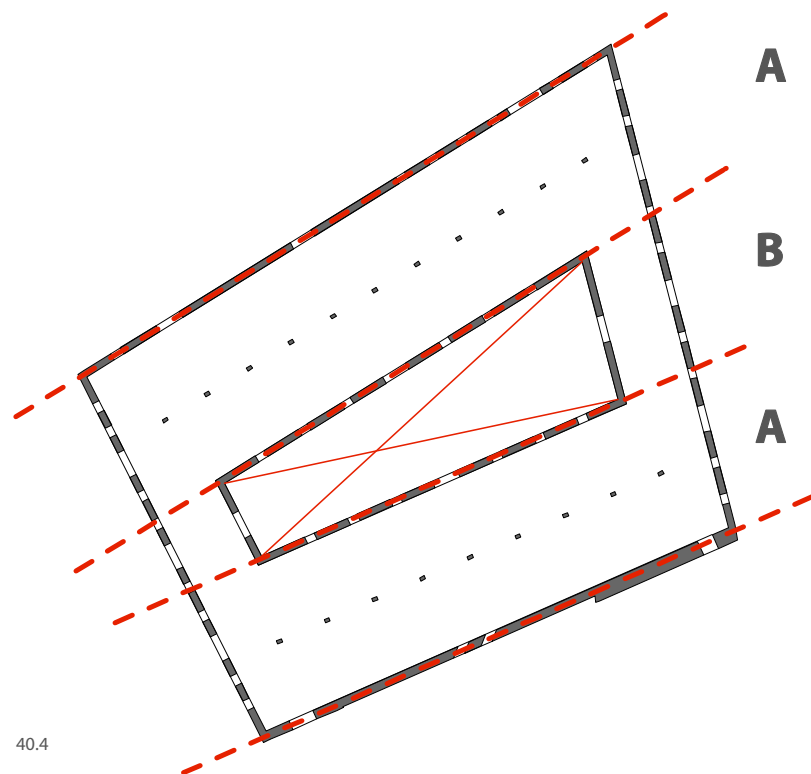
The Armamentarium can be divided into two main typological characterisations:

A - WAREHOUSE TYPOLOGY

For the actual purpose of the building the structure dictates the use, something which is very visible in the utilitarian architecture of the main storage areas.

B - MONUMENTAL PRESENCE

Because of the location and symmetrical architectural language of the main elevations, this part gives the ensemble a monumental value that is closely linked to the urban situation. Because of the symmetry this is mainly directed outwards, functionally this becomes a transitional zone between the two main storage areas.



40.2

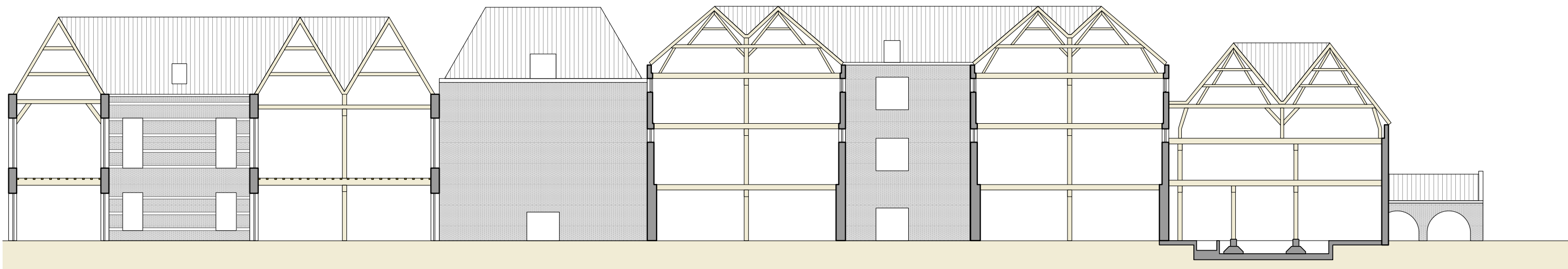
TRANSPARENCY

Only 25% of the most representative elevation is open. This is more than the 1602 Arsenal building, which is remarkable given its more closed introvert function and use.

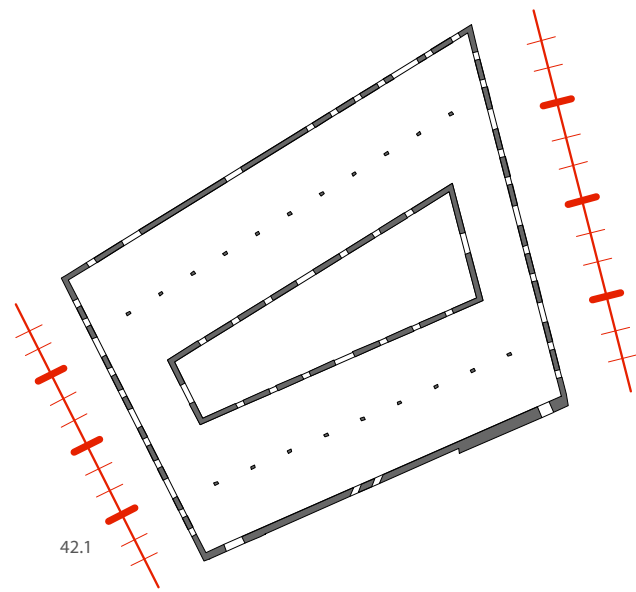
40.3

CHARACTERISATION

Because of its relatively closed elevations and monumental sense of proportion the Armamentarium has a strong presence amongst the ensemble. Technically more transparent than the 1602 Arsenal this doesn't nescessarilly come across. Because of the imposing size and dark materialisation the buildings introvert character is emphasised.



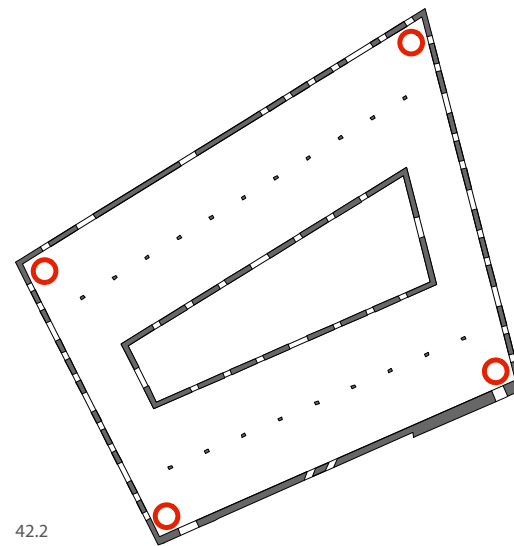
40.6



42.1

DIMENSION

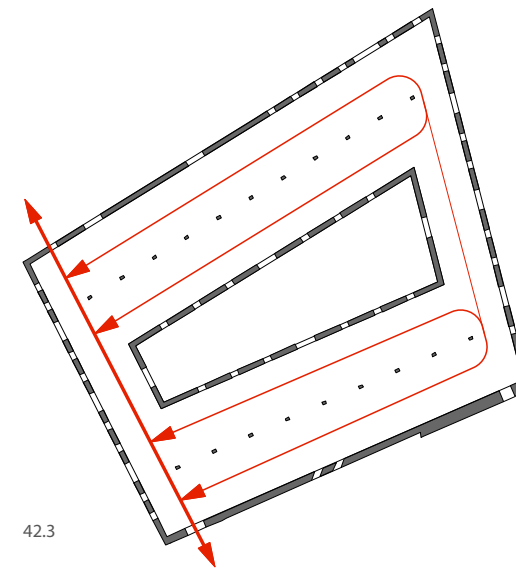
The dimensions of this part of the ensemble are uncharacteristically large for the time it was built. The architectural expression is determined for a large part through the rythm of the two main elevations.



42.2

TRANSPORTATION

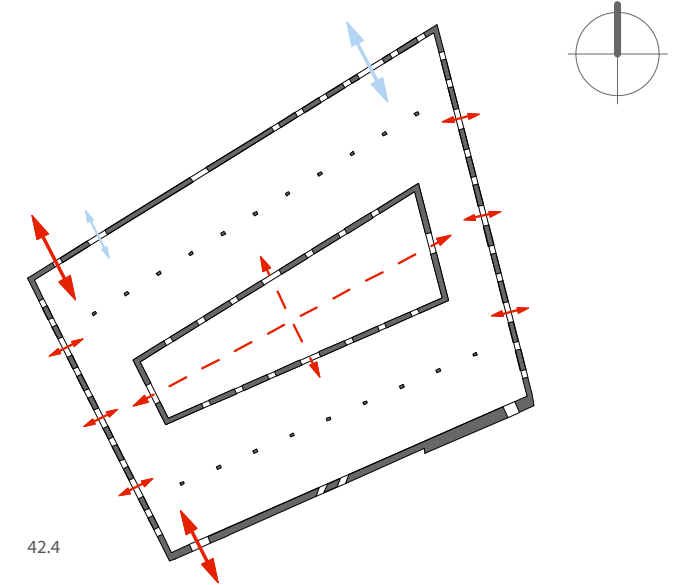
Every corner houses staircases, with the western ones for main transport of people and the eastern ones for emergencies.



42.3

ROUTING

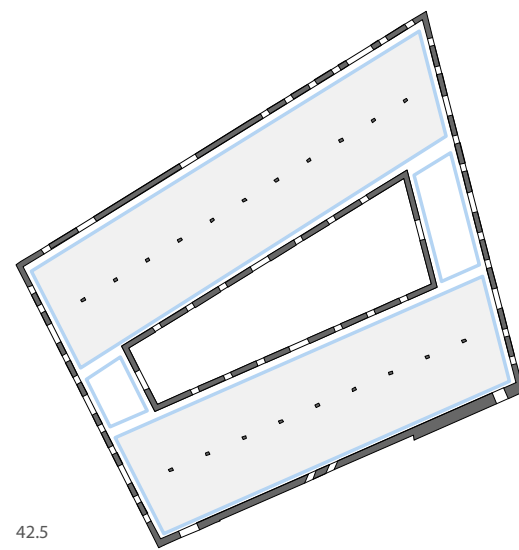
The routing of the building is very much concentrated on the western side. The two main storage areas have a cyclic character and are interconnected to form a continuous loop.



42.4

TRANSITION

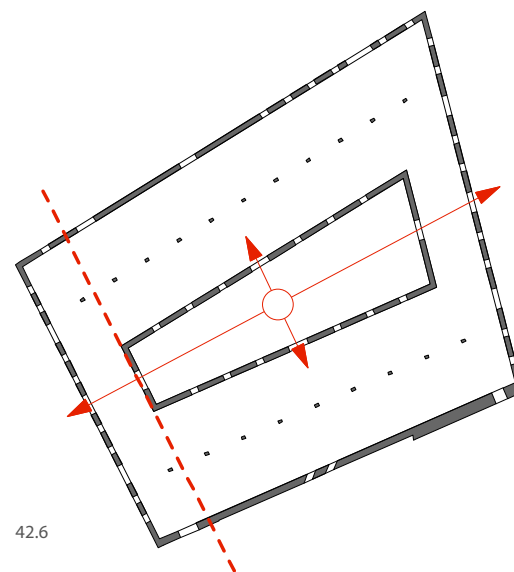
The transition through the building is strongly linked to its original function. The main transition into the building follows the axis of symmetry and finds it centre in the inner courtyard. The current transition through the building has shifted to the western side of the building where the connections to the rest of the ensemble are made.



42.5

ZONING

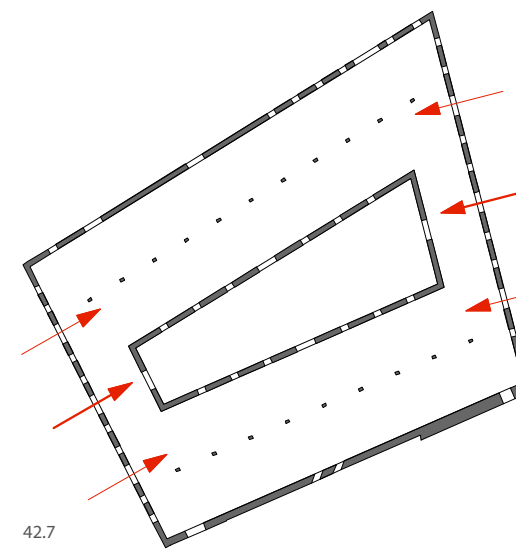
The zoning of the building happens quite naturally through the functional setup of the design. Two main storage areas with inner connecting 'corridors'. This sense of zoning is enhanced by the constructional method of portals which help define the space.



42.6

ORGANISATION

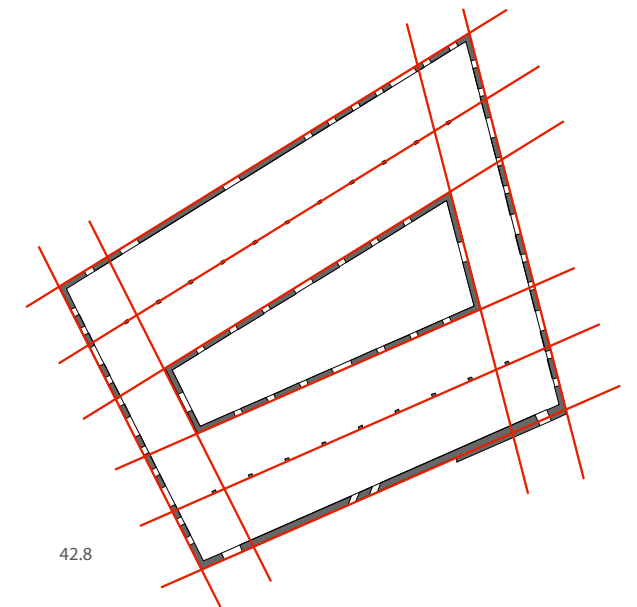
The organisation of the structure emphasises the main typology of the warehouse. The heart is the inner courtyard. Because of its latest function there is an inbalance because of the transitional zone on the western side.



42.7

APPROACH

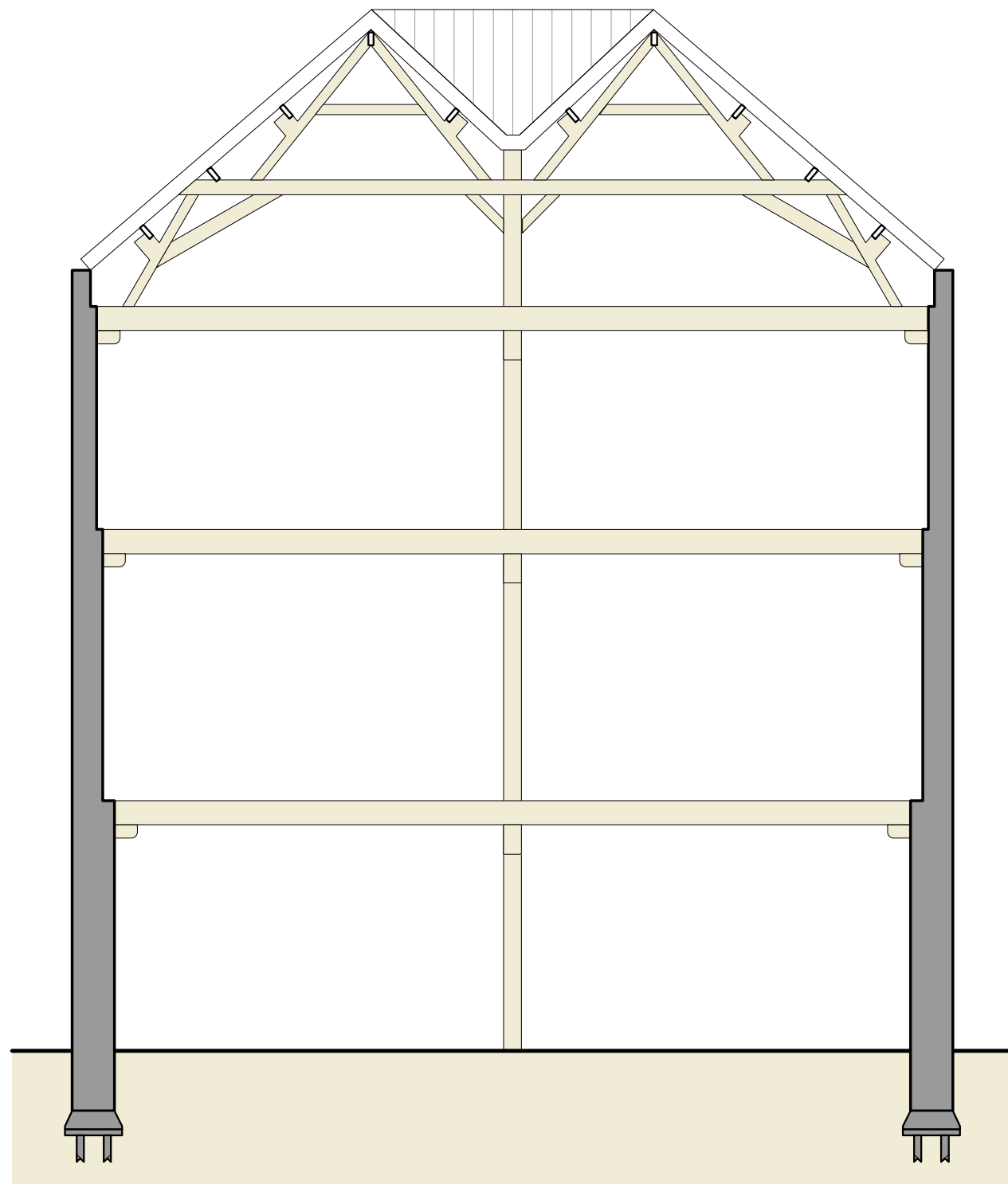
The approach towards the building is from the western and eastern side. The other two elevations of the building are secondary. Because of the symmetry in the elevations the emphasis lies in the middle and has a monumental character.



42.8

GRID

The symmetrical character of the building is further emphasised when a basic grid is introduced. The elongated courtyard provides focus in the west-east direction and divides the program into the two main storage areas.

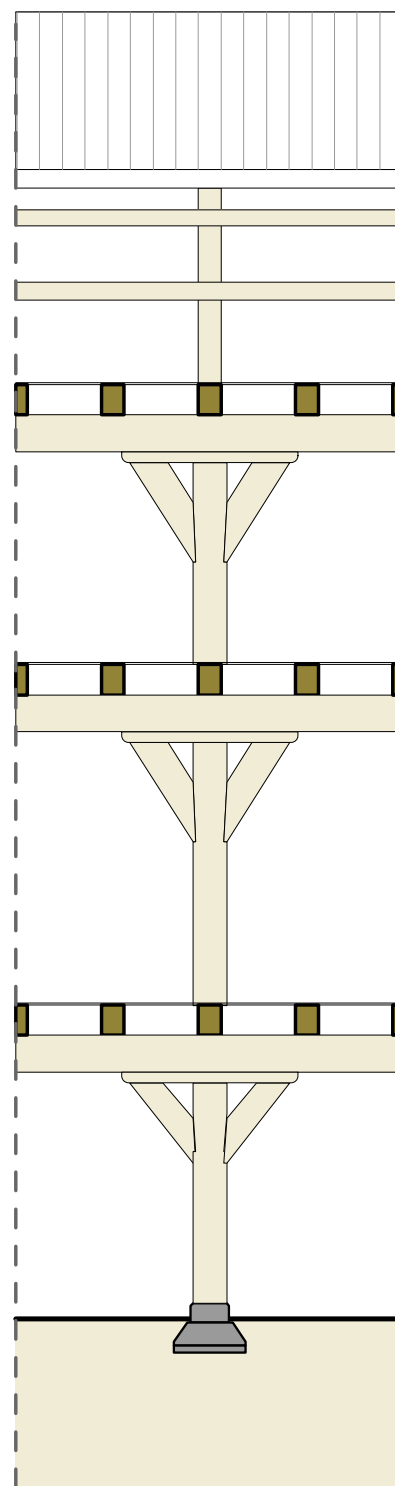


44.1

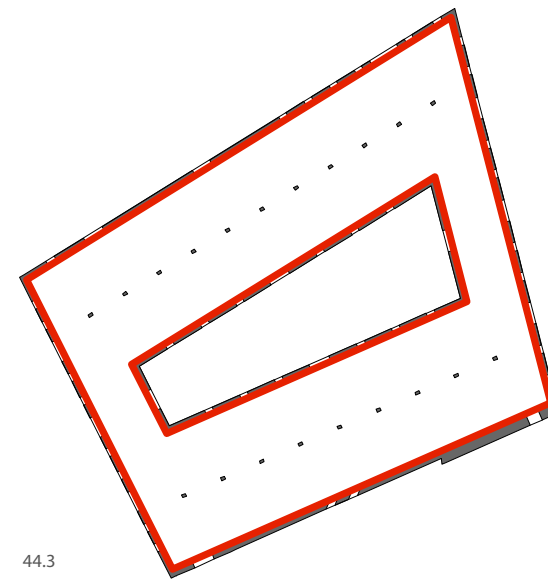
CONSTRUCTION PRINCIPLES

The principles of the construction are clearly divided into key elements: the main load bearing structure, additional elements, beam structure and roof structure.

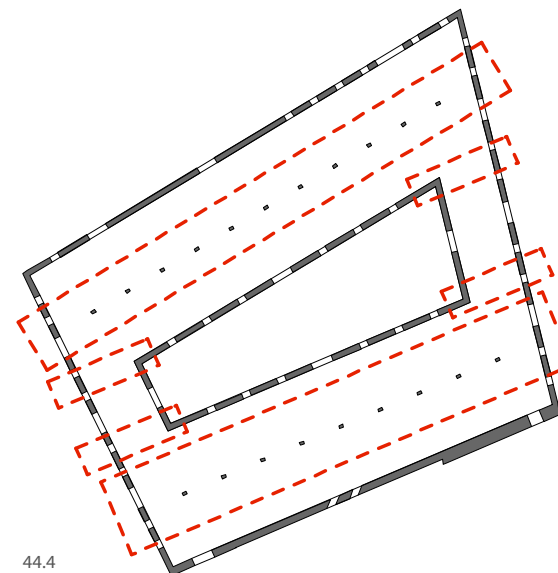
The main construction has a masonry main load bearing structure with wooden additional elements, floors and roof structure. Small alterations and repairs have been carried out during the works of 1751, but the main structure of the building is still authentic.



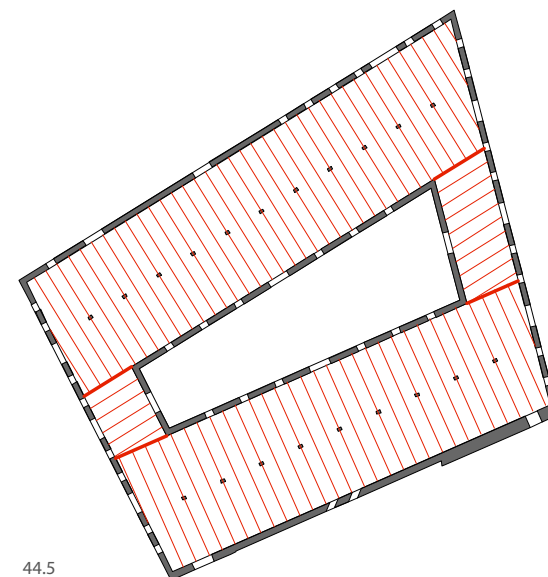
44.2



44.3



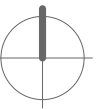
44.4



44.5



44.6 - source: H. Zijlstra



LOAD BEARING WALLS

Solid masonry walls with ornamental accents. They make up the main form of the building and follow the plot. On the western side they are positioned directly in the water, on the eastern side they are positioned along a quay.

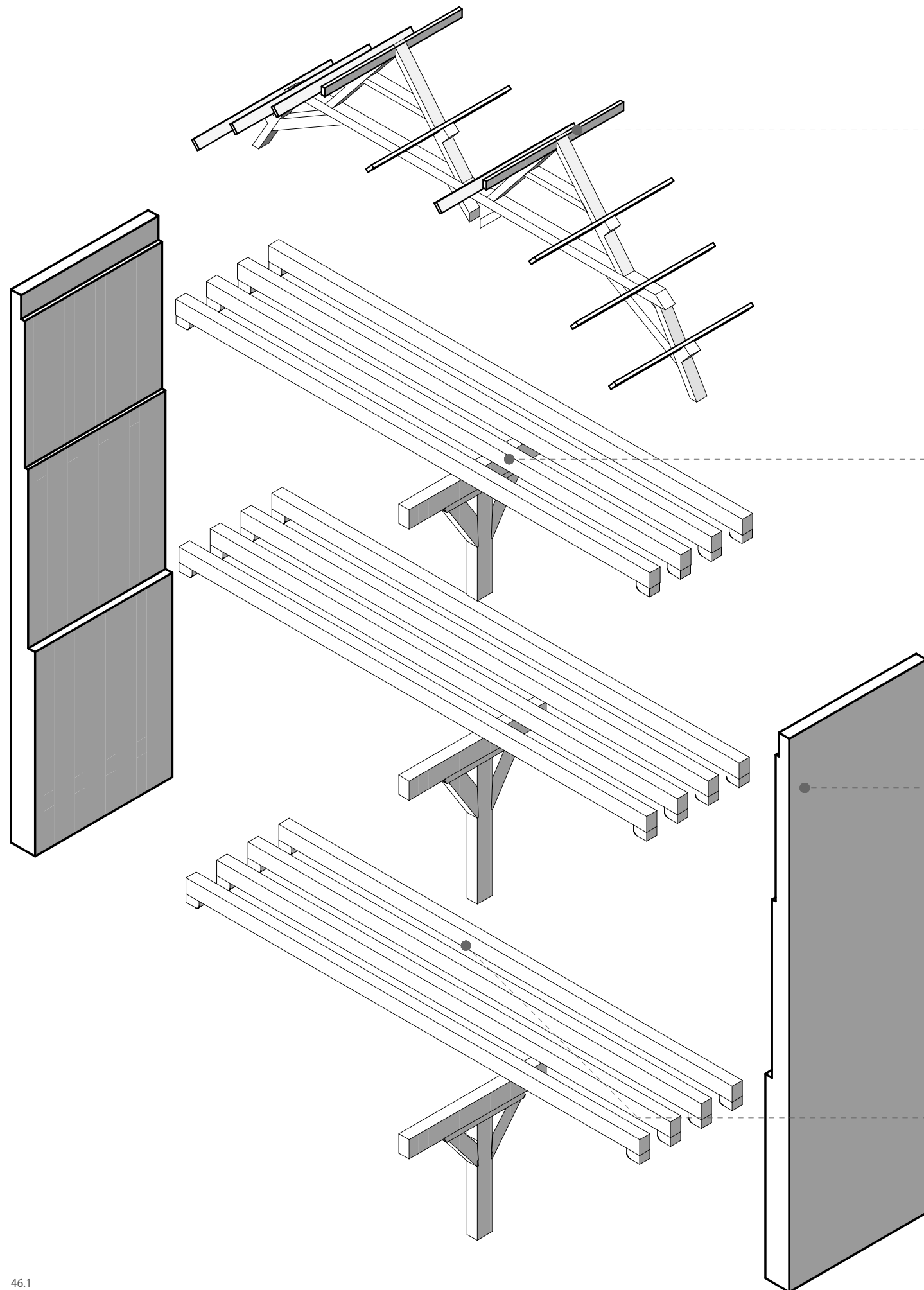
ADDITIONAL LOAD BEARING ELEMENTS

Next to the main masonry structure of the building there are additional key elements. A row of columns (standvinken) play a big role in the typology of the warehouse, which dimensions are determined by the possible span of the original date of construction.

Four portals are added in order to connect the two main storage areas in a continuous flow.

BEAM STRUCTURE

The beam structure is a direct result of the positioning of the main elements of the construction. Sometimes with an extra 'onderslagbalk', the main beam structure has motherbeams which are directly covered with floorboards.



ROOF CONSTRUCTION

The roof construction is still the original from 1692 and is made from pine. Alterations have been made through time using pine wood. An extra layer of wooden boards has been added underneath the roof tiles.

FLOOR CONSTRUCTION

The floor construction of the roofspace is still original. It consists of 'moerbalken' on which the floorboards are placed directly. Sometimes an 'onderslagbalk' is used to create a portal or make a wider span.

WALL CONSTRUCTION

The wall construction is made up out of solid masonry. Exposed natural brickwork, they become thinner each floor up. This effectiveness in construction maximises the available space and is very economical.

FLOOR CONSTRUCTION

The floor construction of the levels is still original. It consists of 'moerbalken' on which the floorboards are placed directly. Sometimes an 'onderslagbalk' is used to create a portal or make a wider span.



46.2 - source: Demarcatierapport Armamentarium



46.3 - source: H. Zijlstra



46.4 - source: Author



46.5 - source: H. Zijlstra

CONCLUSIONS

The research presented in this report has been done with a concise focus on main elements and typologies, in order to understand the essence of the location and the ensemble as a solid base for a redevelopment proposal. During the initial research certain new elements of interest have been discovered, which have led to the formulation of additional sub-research questions that have been investigated accordingly. The main conclusions that can be derived from the research are:

The history of the location of the Armamentarium Complex, up until the actual complex was built, has close connections with the social, economical and political context of the medieval city of Delft. From the perspective of trading and industry it has played a vital role within the city and because of its location, directly behind the main southern defensive gates, it was one of the main points of relevance within the medieval city structure.

The waterstructure of Delft has played a vital role in the growth of the city and its prosperity. Because of the increasing political engagement with regards to the 80-year war and development of the first phase of the Armamentarium Complex the location has a strong presence in the southern urban fabric of the historic city centre. Strongly connected to the surrounding water from a functional perspective makes this an integral part of the city.

With the removal of the city wall the space in front of the Armamentarium might have lost part of its inner city definition, on the other hand it has enhanced the focal quality of the tip of the peninsula with the city outside of its historic borders.

The location has undergone a shift from being on the main point of access of the city with a function clearly related to its urban setting, to being positioned within the same structure poorly connected to the inner city's infrastructure which now are its main means of access.

The way the ensemble developed into its current architectural form is closely related to the functional needs with regards to political developments such as war, but also was deemed important enough to be carried out in the architectural styles that were in fashion.

From the original functional purpose of a storage facility of military goods the emphasis on the moving of these goods was on the water. The eastern and southern edges of the ensemble served this purpose. The transportation of people into the complex and the distribution of smaller goods were situated along the quay on the eastern side of the complex. With the change of the ensemble into a museum the direct physical connection with the water became obsolete and the eastern quay and its succession of squares became more important.

The ensemble gets its focus towards the southern side of the peninsula because of the urban situation and the relation with the waterstructure and the inner Kolk. Within the ensemble the two main storage areas determine focus and direction. The introvert and rather private character of the previous two functions means that the inner space of the elements of the ensemble remains visually restrained with its direct surroundings. The ensemble has a strong presence within its urban setting, but because of its previous function it is disconnected with the vibrant character of the inner city.

The changeable character of the ensemble is one of the main reasons it has been able to stand the test of time and continue to function. The separate elements have been purposely designed for its function and were able to also function separately if possible because of their clear typology. The way they have been combined together within the different scenarios through time required slight adjustments, which haven't interfered with the main character of the most important elements.

The main elements within the ensemble are clearly defined. The monumental presence of architecture and typology are the result of the utilitarian requirements of its program. These main characteristics have not been lost during the transformations in the past.

The structure of the complex and its materials are in a good state generally. During the conservation work, which has been carried out in the 1980's any mayor issues with regard to maintenance have been carried out. Some of the woodwork of the windows needs attention, as does the damp proving of the 1692 Armamentarium.

POTENTIALS

The research has been divided into several sub-categories which each derive their own conclusions. The main ones of these have been extracted within this chapter and provide a set of potentials that can form the base for the first phase of a transformation proposal.

Even though the location partly has lost its significance in the current urban fabric of the city of Delft, this doesn't mean it can't regain this quality. The main characteristics of the ensemble are still present; if they can be reconnected with its surroundings the complex can become part of the inner city again instead of standing out through isolation.

The transitional character of the southern border of the inner Kolk has the potential to be altered in order to make this point of entry into the southern part of the historic inner city more relevant again.

The previous functions of the complex were relatively introverted and took up the entire ensemble of buildings. With the search for a new program there is the chance to create a more mix-use program, which can connect better to the characteristics of the surrounding inner city.

The ratio between built up space (59%) on the peninsula and open space (41%) means there is a large volume of objects to possibly transform because of the size of the peninsula, whilst at the same time there is a generous sequence of open space that can be utilised to link this program to the surrounding city.

The changeable character of the ensemble provides the opportunity to make interventions within the monumental structure of the ensemble. It is important not to loose the main characteristics but to strengthen them and emphasise these inherent qualities.

ASPECTS OF SOURCES		DIMENSIONS OF HERITAGE			
(RELATED TO RESEARCH)	ARCHITECTURAL	HISTORIC	SOCIAL	SCIENTIFIC	
LOCATION AND SETTING	The location within the historic inner city of Delft is emphasised by the setting on the peninsula. (+)	The location around the inner Kolk as the main southern entrance into the medieval city of Delft. (+) The location around the inner Kolk became sidetracked after 1850 is disconnected from the rest of the city. (-)	The location of around the inner Kolk as a social gathering place within the medieval city of Delft (+) The location of the ensemble as an industrial site, from carpentry wharf to storgage facility. (-)		
USE AND FUNCTIONS	The specific function in the building as a focal point to its urban environment. (+) The volumetric size of the former functions call for a large complex within a dense urban area. (0)	The function as a military storage facility. (0) The function as a museum of the Royal Dutch Army. (0)	The function of a gathering place for specific use within the inner city of Delft. (+) The location of the ensemble as an industrial site, from carpentry wharf to storgage facility. (-)	The importance of the waterstructure with regards to irrigation (0).	
FORM AND DESIGN	The different elements of the ensemble are realised in the architecture that suited the time of construction. (+) The definition of the remarkable location within the structure in the inner city through its scale and architecture. (+) The 20th century additions that were necessary to change the function. (-)	The changeable character of the ensemble (+)	The closed introvert character of the ensemble with regards to its urban setting. (-)		
MATERIALS AND SUBSTANCE	Through the several alterations it is hard to distinguish between authentic materials and later additions. (-)	The use of materials that coincided with the constructional principles of the time of construction. (+) The current state of the materials (+)	The carpenter's countmarks on the construction are a personalised element of the maker. (+)	Repairs made in the 1980's to the wooden support structure by using a resin, covered with pine to look authentic. (-)	
TRADITION AND TECHNIQUES	The construction principle of the 1602 Arsenal is performed with the methods of the early 17th century and is still intact on the ground floor and in the roof structure. (+) The construction principle of the 1692 Armamentarium remains unaltered. (+)	The interior of the 1602 Arsenal in relation to the Louis styles of the 18th century. (+)			
SPIRIT AND FEELING	The ornamentation on the 1692 Armamentarium emphasises the national importance of the function. (+)	The historic growth of the ensemble to provide sufficient storage facility meant this was one of the busiest intersections of medieval Delft. (0)	The political connotation of the Armamentarium's military function. (+)		

LITERATURE

The most relevant literature, which has been used during the research and the creation of this report:

Provided documents and literature of the RMIT Blackboard community:

- Semester Manual RMIT Graduation Studio 2013.
- Demarcatierapport Armamentarium, Rijksgebouwendienst, 2010
- Charter of Venice, 1964
- Nara Document on Authenticity, 1994
- Articles and Historical Documentation provided

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- www.delft.nl
- www.vanderkrogt.net
- <http://openarchive.icomos.org/71>