The Story
Once upon a time...
there was a dense and complicated ensemble, at the Hembrug area, a former military production facility. Over time different interventions have taken place in this ensemble. These interventions made the ensemble look like what it is now. The name “uitwisselzone” was used to define this ensemble. In our research we have translated it and reshaped it into the “Changing zone” of Hembrug. To get a grip on the complex the research is going to answer the following research question:

“What is the coherence in the Changing zone?”

To answer the main research question, the developments of the Changing zone are categorized into three questions:

- What was there in the past?
- What is there now?
- What will be there in the future?

These three questions shape the story of the Changing zone. The story of the Changing zone is based on a thorough and detailed research. This research can be used as a reference book for one who wants to gain more background knowledge about the Changing zone.

The ‘Uitwisselingszone’ - The Changing zone
In this ensemble a special exchange emerged in the density of the ensemble. When production started growing, buildings that were seen as disfunctional were demolished and often the newly created open space was filled with new buildings. This interaction of dilution and compaction resulted in an ensemble nowadays which thanks its name to this development of buildings.
The Changing zone

In this analysis the buildings will be addressed by their number. To remember the numbers of each building they are explained by the former function.

322a & 322b = former 'gloeierij' & 'draaierij'
269 = 'de Dood', former cartridges storage
91 = former 'patronenmagazijn & waterzuivering'
112 = 'de Kathedraal', former press building
294 = former 'draaierij'
330 = former 'draaierij'
29 = oldest building, former 'controlegebouw'
407 = former 'gloeierij'
437 = newest building, former 'werkplaats'

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boundaries The Changing zone
What was there?

Over time the Changing zone developed, it grew and shrunk. This exchange was linked to the production process of the weapons and cartridges.

Different tools were used to meet the demands of production of that specific time period. The usage of these tools was always done from a functional point of view (by every owner). Extension when there was a need for more space, demolishment when buildings became dysfunctional and new constructions were built when new technologies needed to be housed.
At the inside of the building a lot has changed too, for example the former open floorplan. This floorplan was necessary for the connection inbetween buildings and was important for the production process of the cartridges. With the latest renovation, some of these connections have disappeared and nowadays they are not visible anymore.

Open floorplan

There was a North-South structure, with production in the south and storage on the north part of Hembrug. In this picture the big cartridge factory is shown as a counterpart of the very dense and high ensemble on the right against the woods.

North-South structure
In this question, the current situation is the central theme. Over time many changes took place, for example at the Cathedral. This building got extended and got a new roof. Also, some other buildings already got renovated. This is visible in the new windows of building 322.

The surroundings of the Changing zone are also very important to take into account in the current situation. The strong North-South structure for example, is currently invisible, because of demolishing the original cartridge factories. To bring back some of the view lines new open spaces are created. By demolishing building 503 the viewline towards the original entrance got restored.

Also at the front of the Cathedral, a new open space occurred. This by demolishing building 505. The original steel structure is kept as a reminder of the building.
In this question the current situation is the central theme. Which traces are still visible and what was their former function? Nine buildings are left at the Changing zone in which the production process took place.

Some of the buildings already got a new function. In one part of 322, the 'gloeierij' Art Zaandstad is located. In the other part and in the storage building a photo museum has taken up residence. In the former 'draaierij' is now Yada located, which is a food market every Saturday and Sunday. In building 29, the former 'controle gebouw' an office is now located.
Since the relocation from Delft to Hembrug, various interventions have taken place. In the question of how the Changing zone ensemble looks like in its current state also other questions arise:
How does the ensemble relate to its open spaces? Are there important viewlines?

Doing research in what there is now is not sufficient if one does not filter the information. After defining the research question, some other questions will help filter the information gathered.

What are the main discoveries?
- Functional approach (transitions between buildings, rooflights)
- Development tools (name: Changing zone)
- Buildings can not be seen separately (coherence)

What are the main values?
- Detailing / materialisation (lack off and extreme)
- Original connections (load-bearing structure, and facade)
- Left over stuff (flooring, structures, installations etc.)

What are the main problems that have occurred doing the research?
- Coherence (How to deal with this > design question)
- Making the complex sustainable (insulation and thermal conditions)
- Lack of open spaces (dense ensemble, no place to built)

Viewpoint 1: Illustrates the small boundary between the back of building 269, ‘de dood’ with the military forest. It focuses on the museum and the characteristic steel structure in the background.

Viewpoint 2: Looks, along with the storage building 269 (‘de Dood’), all the way down to the waterfront. Hereby the focus is on a windmill in the distance.


**What is there now?**

**Building technology**
At the Changing zone the buildings are connected in different ways. Examples are given of the connections in load-bearing structure (294+330) and the connection of sharing the facade (322).

**Buildings 294+330**

**Building 322**

**Source:** Own illustration based on measurements and drawings Rijkswestgoedbedrijf

**Source:** Own illustration based on measurements and drawings ABT
Materialization & detailing

The ensemble is a combination of unique elements in both detailing and materialization. This is a wide range of flooring, roof constructions, facades, windows, and load-bearing structures. These elements all represent the spirit of time of their building. The way some of the buildings are materialized is dedicated to the functional approach of the Changing zone. The images below show an overview of the specific materialization and detailing.

Source: Own illustrations
What is there now?

Cultural value
The coherence that is found in the valuation of the ensemble can be related to the time the interventions took place. The additions or demolitions of buildings that were done in the last part of the development of the ensemble are generally valued lower than interventions that took place earlier in history. In short this is because of the lack of detailing of the buildings and also because the buildings block some important features of the ensemble. This can be linked to the interrelation of the elements that are left. No element can be valued on its own, without thinking about the others. Whether it is about coupled load-bearing structures, closed openings or the materialization. Every element, as well as the ensemble, works as a whole.

When translating the values into reality, the result will occur as shown in the adjacent drawing. In this drawing the rooflandscape of our ensemble is taken into account. The previous value mapping, chrono-mapping, and the Riegl & Brand-scheme are taken into account by the decision to demolish the parts that have the lowest value and to keep the parts with medium and high value.

The striking element of this intervention that comes forward is that the open space in the ensemble will grow by demolishing buildings 407 and 437. This demolition also has a positive effect on the remaining buildings, which then also can be restored in a state where the buildings are appreciated to the fullest. This will lead to the return of roof lights and the restoration of mutual connections and facade openings. The new created open space will become a welcome opposed to the dense ensemble of the Changing zone.

High value
Medium value
Low value

Source: Own Illustrations
shed roofs, best way to get daylight in without the heat

oldest building with an unique vertical transportation system

one of the little skylights left in the roofstructure

thickening of the walls used for the movement of the press machines

a combination of load-bearing structures (demolished) positioned on top of the original flooring, with some traces from the past

the 2nd floor has a better spatial quality then the other two floors, this is because of the rooflight

Source: Own illustrations
The question that was the start of our research was the following: What is the coherence in the Changing zone?

In the case of heritage, the coherence will always be a balance between architecture, building technology, and cultural value. This is also the case for the complicated Changing zone ensemble of Hembrug. Buildings were expanded, demolished and replaced, all in order of the production process. This functional way of thinking resulted in an organic growth of the ensemble, which came before the esthetics and an accumulation of different typologies and styles are now to be found in the ensemble. Even the name of the ensemble remembers of the exchange of dilution and compaction that used to take place over time.

With the Cathedral as the central and highest point of the ensemble, it is visible on the entire area. It is situated in the middle of the Changing zone as well as the Hembrug area. This Cathedral is connected with almost every building of the ensemble. The buildings in the ensemble are often connected when they share a facade, load-bearing structure or rainwater management. The coherence in the materialization of the buildings is often determined by brick facades, steel structures, ‘bimsbeton’ ceiling and wooden flooring.

The valuation of the ensemble is a good resemblance to the complexity of the Changing zone. No element can be valued on its own, without thinking about the others. A general note that can be found is in the valuation of the ensemble, which can be related to the time the interventions took place. Overall the latest additions and interventions are valued lower and they could be reversed in future development.

The functions, the (load-bearing) structures, the architectural layering as well as the materialization are all elements that contribute to the coherence of the ensemble and therefore cannot be seen on its own. Next to that, the composition, the functional way of thinking, the density, the connections, the history, and other relevant values all take part in the coherence of the Changing zone ensemble.

The ensemble of the Changing zone is therefore literally and figuratively interrelated. Through this, the buildings and elements of the ensemble cannot be seen on its own. This is why the ensemble can only work as a whole.
What will be there in future?

To answer this question, three approaches were used. The function as a leading element, based on cultural value (p. 13) and repeating historical steps.

Repeating historical steps

There is a question to create 300% of the original volume on the ensemble plot. This is done by repeating historical steps. To achieve this, different mass studies are done to see the impact of this.

Changing zone: 9,000 m²
New total (300%): 27,000 m²

Option 1: Generating a big tower to achieve the square meters. In this case, the Cathedral is not the highest point and the eye catcher of the ensemble.

Option 2: Hereby the open spaces and the building volumes are reversed. A lot of open spaces is created, but also two high-rise buildings emerge. Original buildings are lost and the atmosphere of the ensemble is totally changed.

Option 3: Demolishing of the two low-rise buildings and creating one new volume to achieve the number of square meters. A large volume of 5 stories, this transcends the height of the Cathedral.

Option 4: Demolition of the entire plot and rebuilding a volume of one story high. Not only is the ambiance of the ensemble gone, but also the open spaces, which have high value too, are lost.

Source: Own illustrations
Function as the leading element
There is a question to create a residential function in the buildings. Therefore the buildings are categorized into buildings that fit, do not fit this function and buildings that can be altered to serve the residential function. These alterations are sometimes big and sometimes smaller ones.

Cathedral
The idea is to bring the original first floor, in the lower part of the cathedral, back. In the higher part, the building can also partly have a story floor to suit the residential function. Some windows need to be restored and also roof lights will be reintroduced.

'Ve Dood'
To achieve a residential function in this building an atrium seems a logical solution. To generate more daylight into the building and make more use of the existing roof lights.

330, 29 and 294
An option is to demolish building 330 to generate an open back street between the building 29 and 294. Building 29 will be provided with (original) skylights and building 294 will be subdivided into smaller houses.

407, 437 and part of 29
Are not suitable for housing and will be demolished from the residential point of view.
Preconditions for future developments

**Spirit of Place**
The Changing zone has a specific spirit of the place, which is made visible in the photo impression in the appendix. Each atmosphere has a different colour and a different meaning to the place. What is still visible now should be leading in the redevelopment of the Changing zone.

**View lines**
It is important not to block the original view lines. These connect the ensemble with the former entrance of the cartridge factories and with the waterfront. Reasoning from the view lines point of view will result in low-rise and maintaining these sightlines.

**Roof lights**
All buildings of the Changing Zone had roof lights. This provides potentials to bring back these roof lights and therefore the buildings will have a better daylight access. When choosing for new constructions opportunities lies to add roof lights as well.

**Composition**
An essential quality of the complex is the ensemble direction. The parcel direction of the buildings is orientated parallel and perpendicular to the North Sea canal. New constructions must take this into account and connect to it.

**Typology**
At the Changing zone ensemble already a large variety of different typologies exists. For the new constructions, this offers opportunities regarding new typologies, that do not exist yet.

**Monuments**
The complex contains some municipal monuments. Dealing with these monuments should always be with extra care (for example the original ‘getrokken glas’ of building 269).

**Function as a leading element**
At the Changing zone ensemble, the function was always leading, resulting in adjustment, demolition and new constructions. For the future development of the ensemble, this approach can function as a guideline.

**Accessibility**
The Hembrug area is very well accessible by public transport, car and bike. Originally the area was a closed-off zone, which was not open for anyone not working in one of the three departments. This provides a potential for bringing back a car-free zone, to achieve this parking place should be appointed.

**Central location**
The Hembrug area is situated on a central location in between Zaandam en Amsterdam. The Changing Zone is even literally and figuratively the central point of the Hembrug area. It is not only located in the middle of the area but it also contains a high cathedral, which is very visible around the complex.

**Underground shelters**
The underground shelters have a strong connection with the history of Hembrug. This provides potentials to house new functions. They are also one of the connecting elements of the Hembrug area, literally connecting the ensemble with the different buildings of Hembrug underground.

Keeping everything in mind, both the research, the various site visits and the story of the ensemble some preconditions can be made. These preconditions shape the starting points for the later design phase.
Facades & roofs
It is highly recommended to bring back the original facade (openings) and original roofs of some of the buildings of the Changing zone ensemble (for example the closed-off windows of building 322).

Open floor plan
In order to bring back the historic connection between the different buildings, it is highly recommended to bring back (part of) the open floor plan of the ensemble.

Military forest
Originally the ensemble has a strong relationship with the forest. This natural boundary should also be retained in the future.

The rarity of the ensemble
The different buildings of the Changing zone ensemble and the ensemble as a whole has a unique spirit and unique qualities. It is recommended that with future renovations/adjustments this atmosphere should be kept.

Materialization and detailing
The materialization and detailing of new constructions must be in line with the existing buildings, with its factory architecture. For example elements such as; skylights, openings, use of brick, timber floors, etc. However, the new building may reflect its own time.

Building height
The mass study shows the maximum height of the potential new buildings should be 12 meter. The Cathedral will then still be the highest building of the ensemble, and the mass of the ensemble will stay intact.

Structure
The original north-south structure of the original factories is not visible anymore. This is due to the demolishment of the big original factories in the south. This provides opportunities to locate new buildings on this area. The maximum height of these potential new buildings must be taken into account.

Low-rise buildings
If necessary, small buildings with supporting functions can be erected on and around the Changing zone ensemble.

Demolition
In cultural value point of view, detonating buildings could possibly be demolished. This can only be done when it is for the greater cause; improving the appearance of other buildings to appreciate this buildings to the fullest. It is all about finding a balance between the old and new.

Where not to built
The Changing zone is already a very dense area, which leads hardly any room for new buildings. It is recommended not to build, without demolishing some parts first. This also applies to the closely connected environment.
How to deal with the coherence in the Changing zone?
Demolition

After the value assessment of the ensemble, the buildings of 437 and 407 were labeled as detonating buildings. The reasoning behind it is determined by the original function, the age, the facades, the materialization and detailing, the state it is currently in, the role in the coherence of the ensemble and therefore the buildings it is connected to.

The function of 437 for example, this latest addition of the ensemble (built in 1970) used to be a workshop for the cartridges production. This function was not as valuable as compared to the other steps of the process, which also is seen in the appearance of this building. This appearance is almost the same as of the already demolished building 505. It is a simple structure, with the same corrugated steel and brick facade. In the case of materialization and detailing the building is spared of specialties. In this building, there are even no openings to be found in the facade. The building is standing on its own structure, it has no internal connections to the other buildings and can be seen as a separate building. It does not interrelate to the rest of the Changing zone. Demolishing it will, therefore, strengthen the coherence of the ensemble.

Building 407 did have internal connections with the Cathedral. Unfortunately this connections were filled with bricks in the transformation of 2003. No other changes have happened to the building which was a former ‘gloeierij’. A lot of traces from the past can still be found inside this building. These traces, like installations and machines are one of a kind on the Hembrug terrain and will therefore be kept in the masterplan. It is also a possibility to keep the steel-structures of this building, like what happened to building 505. However, when we look to the building as a whole, it is not playing an important part for the coherence of the ensemble anymore. Here also the former function plays a role. The melting of the metal that was done here also happened in building 322a. This step of the production process is therefore already to be found in the ensemble. In case of materialisation and detailing this building is interesting then building 407 and will be a better reminder to this function. The machines found in building 407 can for example be placed in this building, to strengthen this connection with the past. The building 407 is also forming a blockade for the Cathedral. In this masterplan we emphasize on this Cathedral. By demolishing 407, the east facade of the Cathedral can be restored again and the Cathedral will be a greater centre of the ensemble and of the rest of the Hembrug terrain.

So, it decided to demolish these buildings to create a bigger open space and make the ensemble less dense. This in order to strengthen the coherence of the Changing zone and to improve the buildings that will be kept of the ensemble. The buildings that are kept create an L-shape, which functions as the enclosing of the newly created open space. When more buildings are demolished, this open space will lose its enclosed atmosphere and the ensemble will lose its story. In the surroundings of the ensemble, two other buildings can possibly also make room to fulfill the demand for new buildings.
The transition from water to the ensemble
The buildings along the waterfront will be higher than the ensemble and the Cathedral. This is because of the industry that can be found on the other side of the canal. To create a barrier against the smell and noise coming from the opposite side, the buildings parallel to the canal will be higher than 16 meters.

View lines
It is important not to block the original view lines. These lines connect the ensemble with the former entrance of the cartridges factories and with the waterfront. Reasoning from the view lines point of view will result in low-rise buildings to maintain these sightlines.

Traces from the past
The ensemble has a rich history where it was functioning as a cartridges factory. Inside the ensemble, a lot of traces from this past are still visible. These traces can also be found in the detonating buildings. It is important to keep this unique traces, while these detonating buildings will be demolished.

Spatial conditions
Around the Changing zone, there is the possibility to develop new buildings. These buildings are restricted to a certain height, to not overshadow the Cathedral. The only exceptions are the buildings situated along the North Sea Canal.

Composition
The Hembrug terrain is constructed along a noticeable composition. The parcel direction of the buildings is often parallel and perpendicular to the North Sea Canal. This is also the case in the Changing zone ensemble. New buildings must take this composition into account and follow this direction.

Open space
Nowadays the changing zone ensemble is a dense area, which will be enriched by a bigger open space. The added value of this new open space is that it still has its enclosed atmosphere and is a welcomed opponent of the dense ensemble.
Restoring buildings
After the demolition of building 407, the east-facade of the Cathedral becomes visible again. This gives the opportunity to change this facade. The facade is going to be restored to its state that it was in before the building of 407 was built against it. It is decided to restore the facade to this state for a couple of reasons. First, it is from great importance to preserve the rhythm of the openings as is already happening. The openings now filled with brick will be replaced by windows and new windows will be added to connect with the rhythm of the Cathedral. This rhythm is a representation of its neoclassical building style and therefore a symbol of the time that it was built. One layer of time will be peeled off by this decision. This already happened at this facade by the demolition of building 505 and could happen again. A remembrance of this layer of time is however still to be found in the Changing zone. It is not in the east-facade of the Cathedral, but it is in the form of the steel-structure that is kept. The building of 407 will also be remembered in a different way than in the facade. This will happen by keeping some of the unique traces from the past. The east facade of the Cathedral is not the only place where an intervention is suggested. Also, at some of the roofs the rooflights can be brought back in order to increase the value and connect with the past. This because these roof lights were also there over time. So by introducing this lights, the roofs will be in some way restored to a state of the past. The Cathedral and its relations with the whole ensemble will be appreciated to its full extent. The coherence of the Changing zone will, therefore, be preserved and strengthened by this intervention.

The Cathedral as the center of the Changing zone
In the center of the Changing zone, the highest building of the ensemble can be found. This former press building is nowadays called the Cathedral, because of its appearance and the atmosphere inside. This building will be the spill of the coherence of the Changing zone. It is interrelated with almost every building of the ensemble, it is positioned on a central location inside the ensemble and the Hembrug area, and with its height standing an outstanding building to emphasize on in the masterplan.

This Cathedral was not the only press building in the Hembrug area. In the ensemble of the Ladder, there is a building where the pressing of grenades was done. This building has also the same atmosphere as the Cathedral. To link the Changing zone ensemble to the ensemble of the Ladder and therefore the rest of Hembrug, this building should be kept. This building can become helpful for the development of the Cathedral. So the Cathedral becomes the center of the coherence of the Changing zone.