Exploring the North Sea Canal
Velsen Waterfront Urban Plan

GRADUATION REPORT 2013
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**FOREWORD**

I proudly present you my graduation publication!
The story will show the work I did in the past one academic year. I started from the regional scale of Noord Holland Province and ended to my final plan in Velsen waterfront area. During every phrase I made analysis, conclusions and visions in different scales. In this process, I was able to see the overall situation and the detailed location at same time, and then give the specific plan for it.

In this project, I have challenged myself to a qualitative discussion about the identity of Velsen and exploring the future value of the canal landscape. It not only improved my professional skills of urban planning, but deepened my understanding of environment, demographic and social issues as well. The problems and opportunities from different aspects urged me to the final strategic plan. This work will always be one of my indelible milestones in my future career life.

Furthermore, I'd like to express my gratitude to Leo van Beek and Karin Akkers for your professional and patient assistant!

**CONTENTS**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Analysis</th>
<th>Conclusion</th>
<th>Vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Scale</td>
<td></td>
<td>06</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conclusion</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vision</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>City Scale</td>
<td>Analysis</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conclusion</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Site Scale</td>
<td>Velsen N+Z</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Velsen Noord</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IJmuiden</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conclusion</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vision</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Master Plan</td>
<td>Master Plan</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Network</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Details of the Plan</td>
<td>Working Zone</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soho Zone</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Living Zone</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Landscape Zone</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recreation Zone</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>
Regional Scale
Analysis
From the height map we can see the average height of this region is below the sea level. Under the threat of global warming, it may have potential danger in the future. Water is an abundant natural resource in this region. The canals in Amsterdam are attracting millions of tourists all over the world. On the contrary, North Sea canal is surrounded by industrial zones which produce large amount of pollution. Noord Holland province has two big forests, Zuid-Kennemerland and Duinen van Texel. These two green self-sustaining ecosystems provide bases for species diversity. “Natura 2000” are protected areas in the territory of the European Union, including Waddenzee, IJsselmeer, Markermeer, dunes, forest and polder.

Conclusion
The coastline is an important ecological structure which needs to be retained. The low land is facing the flood problem and in great need of protection. Because of the heavy industry zones, north sea canal brought itself a notorious reputation for this area. The redevelopment of the industrial zones is quite urgent, in order to give back the canal a beautiful identity.
Analysis
The railway system is quite dense and busy near Amsterdam. The accessibility to Leiden, Utrecht and Almere is good. Opposite to the complicated railways in the south part of the region, the north part has only railways heading two directions: to Den Helder and to Enkhuizen. Similar situation as the railway system, highways are intensely distributed around “Haarlem-Amsterdam” area. The Noord Holland province also has quite a lot harbors and some of them used to be of historic significance. Now some of them still have the function of transporting, while the rest function as fishing site for entertainment use. The tourism routes are popular among sport lovers.

Conclusion
There are 3 congested spots in this region. People going the northeast of this province make the A7 highway congested near Pumerend. The congested node on A1 near Muiden is due to large volume of traffic heading towards Almere. The Velsen tunnels are also congested because of the large working area and the undesirable infrastructure condition in Velsen area. We may convert the historic glories of old harbors into innovative use, for example, making a waterway connection. By this way, we can not only solve traffic problem, but also relive their historical value.

LEGEND
- harbor
- (a lot of historical harbors that can make use of)
- waterway connection
- (a possible way to re-use the historical harbors)
- congested node
- (places having traffic jams in rush hours)
TOURISM

Analysis
Zijpe flower is working on improving its tourism industry these years, but it hasn’t received quite a fame, especially among foreign tourists. On the long coastline locates plenty of beaches, which attract a lot of tourists every year. There are several historical towns with very old town center and harbors. The historical value and brand need more attention.

Conclusion
The beautiful beaches along the coastline need to be retained. Zijpe flower attraction need to be strengthened to compete with Keukenhof Garden and attract more tourists. It is necessary to find the unique feature out of Zijpe flower farm. The historical towns also give us a big opportunity, connecting the towns with historic traffic, such as old trains or waterway. And they can be connected with Amsterdam, the mature tourism center.

LEGEND

- coast line
  (beautiful beaches need to retain)
- mature tourism center
  (with all kinds of attractions for different tourists)
- historical towns
  (historical towns can be connected by historical traffic and attract more tourists)
- mature flower attraction
  (very famous and popular, a lot of foreign tourists)
- flower attraction
  (big scale flower farms, need a different feature from Keukenhof to attract tourists)
Analysis
Noord Holland province has numerous rural farms. Flower farms are dominating in number in this country. The flower agriculture of Netherlands is well-known all over the world. The scale of the flower farm is several times bigger than Lisse in the province of Zuid Holland, but much less famous because of Keukenhof Garden. Care farms are farms where people with physical and light intelligence problem, recover their individual abilities through appropriate daytime activities. It helps them reintegrate into society. Noord Holland has third most of care farms in Netherlands. Fishing town is another feature of Noord Holland.

Conclusion
Most of the flower farms located on a broken line and it is possible for them to cooperate on business. The flower farm centralized area in Zijpe needs to be strengthened. The care farm is a good solution which can be promoted to a bigger group of the elderly.
AGING
Population aging means the increase in the number and proportion of older people in society. It is one reason of the shrinking issue. The following maps show the composition of people from different age groups in 2010 and the predictable 2020.

The aging problem in Noord Holland province is mainly happening along the coast line right now. But the aging trend will spread to the entire province in the next 10 years. The Egmond aan Zee and Bergen aan Zee area share the most severe aging problem.
Leaving
Negative immigration is also an important reason of population shrinking. Following is the immigration map of Noord Holland province. Red means people are moving in and green means people are moving out.
There are two big areas where people are moving out: the north area of the province and the Velsen- Amsterdam area. But they have different reasons to leave. People are leaving the north area due to the lack of job opportunities and education facilities. People leave Velsen because of the bad industry image and the unfriendly environment. A lot of people are leaving Amsterdam because the city is too noisy while crowded by youth and tourists. They leave for Haarlem or Almere, trying to seek a better living.

LEGEND
- boundary
-16 - -7
-7 - -3
-3 - 0
0 - 3
3 - 7
7 - 40
(person per 1000 inhabitants)
From these two maps, we can find that Amsterdam has various kinds of industry. The next three biggest industries are in Haalem, Velsen and Den Helder, but they only have one to three industry categories.

The highest unemployment rate happens in Amsterdam, Velsen and Den Helder. The rate in Amsterdam may due to the large number of people who come to seek opportunities. But the high rate in Velsen and Den Helder is more caused by the very limited number of industry types in Velsen and Den Helder.
sum up of all the CONCLUSIONS

LEGEND
- ecology axis
- heavy industry
- lower land
- bad riverbank image
- harbor
- waterway connection
- congested node
- flower farm centralized
- flower farm axis
- care farm centralized
- green house centralized
- fishing centralized
- airport
- population flow
- historical town
- flower attraction
This map contains all the conclusions from the analyzed topics. The locations with more icons are the places where some problems or opportunities exist. Six locations like this are found in this map. After comprehensive consideration of the problems and opportunities, we come to the vision of regional scale:

1. Velsen Green Waterfront Development
2. Egmond aan Zee Care Farm Living for Elderly
3. Zijpe Flower Agriculture Strategy
4. Den Helder Harbor Redevelopment
5. Noord Holland Historical Ferry Tour
VISION
VELSEN GREEN WATERFRONT

Location
Velsen

Background
On one side, Velsen area has a bad image of heavy industry. People are leaving for a better living environment. On the other side, the industry type is mainly metallurgy, so the unemployment rate is high in Velsen area and causing social problems there.

Vision
A greener, environmental-friendly area, with more appeal for people. It will provide more job opportunities and better living condition against the bad identity and shrinking problem.

Influence
Local
VISION
CARE FARM LIVING FOR ELDERLY

Location  Egmond aan Zee

Background  Noord Holland Province has the third most care farms in Netherlands. The Egmond aan Zee area has the most severe aging problem.

Vision  Nice and quiet living environment for the old people. The care farms can be fun for them and let them help each other. It can be a model of the solution and be promoted to other rural population aging area.

Influence  from Local to National
VISION

FLOWER LAND UNION

Location     Zijpe as a center
Background   There is a large amount of flower farms in NH province. Most of them are working on their own without cooperation. Only a few tourists are coming in spring to see flowers.

Vision       Cooperated flower farms. They can create a “flower union” and then arrange production and transpotation together. Zijpe will be used as a center to attract tourism, especially the helicopter and fire balloon flower tour from Den Helder or Texel airport.

Influence    Regional
VISION

RECREATIONAL HARBOR REDEVELOPMENT

Location  Den Helder Old Harbor
Background  Ship building industry is shrinking. Some of the industrial buildings near harbor are abandoned. The environment around the harbor is bad.

Vision  A public recreational space for all the Den Helder people and even the Texel.
Influence  Local
Location: Volendam, Hoorn, Enkhuizen, Medemblik

Background: There are a lot of harbors in Noord Holland province with high historical values. Hoorn, Enkhuizen and Medemblik have the similar historical identity, but not as attractive as Volendam.

Vision: A new sustainable ferry connection to connect the historical towns which can attract more tourists from Amsterdam and Volendam to go north to Hoorn, Enkhuizen and Medemblik. In summer the tourists can even take to ferry to Texel.

Influence: Regional
Strength:
The green living in Velsen Zuid and Santpoort Zuid have good environments.

Weakness:
Velsen Noord living area is surrounded by industrial area. The pollution and heavy traffic are both influencing it negatively.

Opportunity:
Santpoort Noord and Velserbroek living area has a potential to grow and being tightly connected with Haarlem.
It is possible to redevelop the area in front of Velsen Noord living area and then connect Velsen Noord living area with the beautiful waterfront landscape.

Thread:
If Velsen Noord is going to develop, the industrial barrier around it need to be taken care of.
Strength:
High-tech industrial companies, such as steel, offshore wind farms, are providing large amount of job opportunities and important economic contribution for Velsen.
The old style steel industrial architecture in Velsen-Noord has a historical value. It is attracting some hiking tourists.

Weakness:
The pollution effects the identity of Velsen, especially Velsen-Noord. People are leaving this area.

Opportunity:
The steel industry produces large amount of heat which can be reuse as sustainable energy.
The islands in the north sea canal are quite empty right now. It is possible to make some developments on them.

Thread:
The heavy industrial traffic will keep existing in this area.
Strength:
The highway connection is good (A22 and A9).

Weakness:
The traffic jams near the two tunnels are not easy to solve.

Opportunity:
There are several hiking route through the road on the islands. Improving the islands landscape can make the hiking routes more interesting and attractive. Using water transport can release some pressure of the network system.

Threat:
The south part of Velsen are more and more connected with Haarlem and has a lot of development happening. On the opposite, the Velsen-Noord living area is almost forgotten by people.
TOURISM

Strength:
Ijmuide aan Zee and Spaarnwoude are popular tourism attractions in Velsen.
A lot of Cruising ships are going through north sea canal.
Spaarnwoude area has very good infrastructure connection.

Weakness:
Velsen Noord aan Zee has some water sports recreation. But it is not attractive enough because of the bad connection.

Opportunity:
It will be very helpful to increase the visiting of Velsen Noord aan Zee if we create a better connection.
Improving the “north sea canal entrance” area can give a strong impression for cruising tourists, including a lot of foreigners.

Thread:
Amsterdam in short distance is much more attractive for tourists.
Strength:
The greenery percentage is very high in velsen area because of the two national parks. The beaches are also attractive.

Weakness:
The eco axis along the coastline appears a missing link at velsen area. The eco structure is blocked by the industrial area.

Opportunity:
Even the missing link cannot be restored because of the industry, the eco axis inspired us to create more green in and near the Velsen-Noord and Ijmuiden area.

Threat:
The steel industry on the north of the canal and harbor industry on the south of the canal are not possible to remove.
CONCLUSION

From Map ① to ③, Map ① is the combination of all the analysis maps, with all the information we need. But too many icons make it hard to read. Another disadvantage is that we can’t distinguish an icon is meaning the positive or negative effect for Velsen area. The solving method is making a SWOT analysis map. By dividing the icons into 5 topic groups and showing S, W, O or T, we achieve map ②. It is easily to find that where has the most positive (red) icons and where has the most negative (black) icons. Then we get to the final map ③.

Conclusion
From the analysis, we draw the conclusion that: Ijmuiden Islands are the most potential area and Velsen-Noord is the most problematic area. So these are two sites I’m going to focus on detailed analysis and design.
Site Scale
VELENSE NOORD

Velsen-Noord is the only part of the municipality of Velsen on the north shore of the North Sea Canal. The connection between Velsen-Noord and Velsen-Zuid is via the ferry and tunnel. People commute between Velsen-Noord and Ijmuiden by sea or by road roads on the sluice islands.

Most area of Velsen-Noord belongs to TATA Steel Company (formerly Corus). This is the second largest steel producer in Europe, operationed together by UK and the Netherlands. It plays an important role in Velsen economy. TATA Steel Company provides more than 9500 job opportunities in Velsen area.

VELENSE ZUID

Velsen-Zuid is a village at the south shore of the North Sea Canal, on the west of Ijzuiden, in the municipality of Velsen.

The living area is also developed from the old Velsen village. Different from Velsen-Noord, the Velsen Zuid village is well protected and still has 58 national monuments.

Spaarnwoude Recreation Area serves as the buffer between Haarlem, Amsterdam and Velsen. In an environment with vast polders and forest, it has various types of recreation activities, such as cycling, hiking, swimming, golf, skiing and canoeing. With 66 holes, Spaarnwoude Golf is the largest golf course in Europe. 350,000 people annually visit the golf course and there are approximately 175,000 rounds played.

The living village is at the east of the industrial area, which is developed from the old velsen village. The houses are mostly small and old. The water landscape is blocked by paper industry area.
VELENZ N+Z

NORTH SEA CANAL
Aimed to improve the connection between the harbor of Amsterdam and the North Sea, the North Sea Canal was built in 1824. But this long and narrow canal was quickly inadequate to handle the growing boat traffic. A few decades later it was decided that a new canal should be built at the narrowest point in Holland and thereby providing the shortest route to the sea.

Digging began on March 8, 1865, at the dunes of Breesaap and lasted until 1876. This task changed not only the situation of Amsterdam harbor, but also every village it passed through, for example, the Velsen village.

VELENZ VILLAGE
The Velsen-Noord and Velsen-Zuid villages used to be a complete original Roman village, the Velsen. Because of the North Sea Canal construction, it was split into two parts, namely Wijkeroog (now Velsen-Noord) and Velsen (now Velsen-Zuid). The core of the original Velsen village was in the present Velsen-Zuid. There stands the church from 13th century and quite a lot of historical architectural monuments.
VELSEN NOORD

POST-WAR RECONSTRUCTION

After World War II, Velsen-Noord area had the most urgent reconstruction task in the municipality of Velsen. Economically, it had quick and easy access to large local industries such as the royal steel mills (later Corus), the Van Gelder paper factory and the PEN electricity generating station.

The plan’s backbone was the existing development along Wijkerstraatweg, the old road dating back to the Middle Ages of the old village Velsen. The De Schulpen neighborhood was completed as early as 1948-1949, with 970 houses in total for housing the steel mill’s employees.

The Gilden district was planned to develop for the establishment of a chemical plant near the Hoogovens. A greenbelt was to keep industrial and residential areas separated.

Ultimately, the industrial plans were not realized, and the Gilden subdivision ended up quite a bit smaller that first planned. The scale of the living real estates were smaller than the plan, either. Why? What’s the reason?
VELSEN NOORD

FROM BRIDGE TO TUNNEL

During the construction of North Sea Canal, the railway Haarlem - Uitgeest was built in 1867. A railway bridge was designed in Velsen. In 1905, the former railway bridge was replaced by the largest swing bridge in Europe. It played an important role in the Wars. Later in the post-war years, a lot of developing plans were designed along this railway. It could be called the most prosperous years of Velsen-Noord.

However, things changed in 1957. The official opening of Velser tunnel and the decommissioning of Velser Railway indicated the disappearance of the railway bridge. Then it was demolished in 1958. Since then, the old connection was broken and it limited the growing of Velsen-Noord. The developing pace of Velsen-Noord slowed down immediately.
IJMUIDEN

HISTORY
At beginning, the construction of these islands was for military implications at first, as part of the Defense Line of Amsterdam.

In 1876, Netherlands decided to increase the accessibility of Amsterdam by digging a canal directly to the sea. The North Sea Canal was gated by two sluices which can control the ships coming through and keep them in safety. This situation made the military leaders of Netherlands quite worried, because if an enemy took the sluices in hands, the entire Defense Line of Amsterdam would become useless. And that was the reason they built a fort for these sluices then, which we now know as the Forteiland at IJmuiden.

In 1996, the entire Defense Line of Amsterdam, including the IJmuiden islands, got on the World Heritage List of UNESCO.
The water level in the Dutch rivers is not the same everywhere. This is quite inconvenient for commuters because you can’t go by water to everywhere as your wish, without the help of a sluice, which is a type of elevator in the water.

**NEW SLUICE PLAN**

With the increase in the size of ships, the sluices now become a bottleneck for shipping to Amsterdam Harbor. On the other side, the Noordersluis will reach its end of technical lifetime in 2029. Therefore RWS decided to build a new, larger sea sluice at the entrance of the North Sea Canal, replacing the Noordersluis.

The completion of new sea sluice can be expected in 2019, which may already be in the testing phase in 2018. The construction is expected to start in 2015. The maximum budget is 848 million euros. (The Ministry of Infrastructure and Environment: 574 million/ The Province of Noord Holland: 58.3 million/ The City of Amsterdam: 129.6 million)

From this new sluice plan, we can obtain:
- space for more goods transport
- larger volume of water transport with higher efficiency and safety through the North Sea
- Amsterdam Harbor maintaining its international appeal
This island is close to the steel industry. The pumping station and some industrial buildings are on it. It is a suitable place to locate some new light industry companies.

The southern islands are mostly empty right now. They are potential areas for new water living. They have an appropriate distance from the steel industry that they can have the industry view from their window, but without the noise and smoke.

The motorcycle field is a very noisy node here. There are two strategies to deal with it. One is to remove it. The other is to take advantage of it, for example, attract more dynamic and noisy activities here.

Here locates several water storage tanks of the paper factory. It is possible to be opened to public with more greenery and give a better image for the marina nearby.

The two churches can be used as landmarks and attract people to come. A small cultural and leisure center will appear.

These two industrial building should be demolished and give back this area to residential function, especially the living with the canal identity.
On the sluice islands, we add various types of recreation space and facilities, such as cafeteria, swimming pool, spa shop, fishing island, camping site and water stage, together with the existing motorcycle field, becoming a leisure center area served for all the inhabitants of Velsen municipality, attracting tourists from other place from Netherlands at the same time. On the quiet islands, we designed different kinds of houses.

At the south area of Velsen-Noord, we demolish the industrial buildings and let the living part connected with the canal. The historical Wijkerstraatweg is restored, leading to the newly designed water podium, instead of Velsen-Zuid. The west part of the site is used for more industrial business, while the east part is the emphasis of this plan: water living area. Between these two function areas, we set the SOHO plots as the transition of usage. The area around two churches is made as a central park, connecting the west forest. At the east side of the central park, the old industrial buildings are redeveloped as commercial buildings and an open plaza which can be used for open market.
MASTER PLAN

- camping site
- water stage
- light industry and offices
- existing forest
- central park
- commercial plaza
- green living
- water living
- existing industry
- soho plots
- water platform

VELSEN ZUID RESIDENTIAL AREA
Details of Plan
ADVANTAGE
location: near TATA steel industry
connection: 10min to A22 highway
water transport through North Sea Canal
a heliport on this island

TARGET GROUP
downstream light industry of steel industry
assembling and distribution industry
ADVANTAGE
location: close to TATA steel industry
collection: 5min to A22 highway

TARGET GROUP
downstream industry of steel industry
upstream industry of paper producing
SOHO
SOHO (small office/home office) refers to the category of business or cottage industry that involves from 1 to 10 workers. Since the 20th, many consultants, lawyers, real estate agents, surveyors, architects and designers in small and medium-size towns operate from home offices. With the coming of Internet, anyone working from a SOHO is able to compete globally.

ADVANTAGE
- short distance from Haarlem
- in a high density population region, big custom group
- convenient living, green environment
- much cheaper price or rent than big cities

TARGET GROUP
Entrepreneurs from the whole Velsen municipality
LIVING ZONE

Water Living in Velsen Noord

Velsen Noord water living locates at the southern waterfront area. We dig two shallow canals here. The water living contains two aspects. One is living near water. We keep the greenery zone between water and houses, this will be a small half public water park for these people to reach their boats. The other is using the waterway. At the entrance of the canal, we designed a harbor. The people living here can go out by their own boats through the North Sea Canal.
LIVING ZONE

People will have different choices of water living on Sluice Islands, such normal houses, villas and even floating houses.

TARGET GROUP:
People working in surrounding industrial areas
People working in Amsterdam
People loving water living style
People seeking for innovative living atmosphere
The green living enables people to feel the nature near home. The houses will be surrounded by trees which can keep the privacy and provide a quiet life. People can enjoy a forest life with convenient city facilities nearby in Velsen Noord.

Here are the green living + water living on the sluice islands. People can not only enjoy the quiet and green environment, but also have a wide water view. The north side villas will have a unique view of the steel factories at night.
There are two churches close in Venisen-Noord. From the two pictures we can see that: one church is surrounded by cemetery and real estates. Around the other one is empty land. The idea is to use the empty space as a central park for public, connecting the forest at the northwest. We add a fountain and some leisure and fitness equipment so that people can have a lot of fun while enjoying the greenery.
The waterfront side of Velsen-Noord is an industrial area between the living area and North Sea Canal. The space is not effectively organized. Some use it as a parking lot. The restored historical main road Wijkerstraatweg leads people to the waterfront side from all the living area of Velsen-Noord. This will become the best place for the inhabitants to enjoy the canal image. People can bring their own deck chairs here to spend an afternoon under sunshine. Or the families can have a walk together after supper.
Three cafeteria plazas are designed near different sluices. People can have a coffee or a dinner here. The huge cruising ships and cargo vessels will become the unique scenery for the customs.

The swimming & spa center will serve all the inhabitants of Velsen municipality, providing swimming, spa, sauna and fitness equipment. It will use water from the North Sea by sustainable technology.
This building will be used as science laboratories, such as monitoring water levels, testing water quality, researching water purification system, etc. The irregular roof will be covered by greenery and become part of the recreation route. Pedestrians can go through the green roof, or have some leisure time on it.

The fishing platform locates at the narrowest island of the sluice islands. The broad waters at both sides and the appropriate distance from ship routes make it a suitable place for fishing.
Because this island is very far away from living area, it was chosen to build a motorcycle field so that the noise won’t disturb anybody. In this project, we don’t plan to remove it. On the contrary, this inspired us to add a more dynamic and “noisy” recreational function: pop music. The stage on water is for outdoor concert. It is rotatable to face the seats or the water. Near the stage area are music bars and camping site. Visitors can enjoy a vibrant night here!