

Transforming a low value coastal area into a high value natural and recreational area

Michiel Ritzen

Faculty of Architecture, University of Technology, Delft, the Netherlands

ABSTRACT: The coastal zone in the Netherlands takes a very peculiar place in the discussion about sustainability in the Netherlands. Large areas are left unused and they remain low cost value areas due to the lack of progressive decision-making. These areas have a low value in economic, recreational and natural sense that often lead to a further degradation of the area involved. A responsible way of coping with these areas is essential for a sustainable future of the Netherlands. This downward spiral can only be broken by stepping over the boundaries of the traditional decision making pattern and by implementing sustainable design tools that lead to new forms of (urban) architecture in which sustainability is implicit. In this paper I will demonstrate that by doing the above, low value areas can be transformed into high value areas on all three aspects using an used drilling platform as a landmark and hotel in combination with a yacht harbour in a natural and recreational area in the coastal zone in Katwijk aan Zee, the Netherlands.

Conference Topic: 6 recycled architecture
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INTRODUCTION

The coastal zone in the Netherlands is widely discussed due to the spatial pressure of a constantly growing number of inhabitants and due to a threatening rise of the sea level. At this moment, the government is very reluctant at making progressive decisions and conservatively defending the Dutch land against the threats of the sea. By doing this, it is passively demolishing the Dutch landscape in large areas, leaving no space for recreational, economic or natural elements.



Figure 1: Traditional Dutch defence against the sea using bent-grass.

I focused on a coastal area just north of Katwijk aan Zee in the Netherlands. The area is used as a parking lot and can be described as a low value area in recreational, economic and natural sense.



Figure 2: The location north of Katwijk aan Zee.

I transformed the area into a high value natural and recreational area in which a changing sea level and a diversity of flora are the main natural attractors, and in which a yacht harbour and a hotel are the main recreational attractors. The harbour and hotel will give an economic impulse to the region by creating jobs and attracting investors.

I demonstrated that sustainability can create an extra quality of a design and should be implicit in the built and natural environment. I did this by focusing on a number of sustainable design tools described in this paper. These tools are upgrading natural values, upgrading recreational values, recycle to the max and sustainable energy.

2. UPGRADING NATURAL VALUES

One of the most important aspects of the Dutch coastal zone is its natural value. Adaptations in this zone should therefore lead to an upgrading of this value and not to degradation. In order to cope with this situation, I studied on which aspects of natural values are of importance to this location. In this paper I focused on the most important three; water, flora and built elements.

2.1 water

As mentioned earlier, the Dutch land is at this moment conservatively defended, resulting in a rigid division between land and sea. But exactly the interaction between land and water lead to high value natural areas with a diversity of flora and fauna. At the location, I re-opened the dune landscape to let seawater enter, creating new possibilities for plants and animals to flourish. Adventitious is the discharge of the old Rhine in the North Sea at this location that lead to a further interaction between salt and sweet water, creating even more possibilities for improvement of the natural values.

2.2 flora

I studied on the possibilities for flora and fauna that could be (re)-introduced in the coastal zone. I focused on flora originally from Dutch origin, and investigated the flora in the Waddenzee and in Zeeland, where interaction between land and sea is abundant.

At the given location in Katwijk aan Zee I created in my design the natural habitat for a selection of the flora possible in the area, in which way the natural value will be upgraded.















 Scaevola taccada 0,1 - 0,4 m	 Scaevola taccada 0,10 - 0,40 m	 Scaevola taccada 0,2 - 0,5 m	 Scaevola taccada 0,9 - 2,4 m	 Scaevola taccada 1,2 - 4,5 m	 Scaevola taccada 0,7 - 0,8 m	 Scaevola taccada 1,8 - 4,5 m
 Scaevola taccada 0,1 m	 Scaevola taccada 0,1 - 0,4 m	 Scaevola taccada 0,1 - 0,4 m	 Scaevola taccada 0,1 - 0,4 m	 Scaevola taccada 0,1 - 0,4 m	 Scaevola taccada 0,1 - 0,4 m	 Scaevola taccada 0,1 - 0,4 m



Figure 3: Section of the green plan with a scheme of plants used.

It is important in a realisation stage that to due to the vulnerability of the created landscape, awareness of the fact that it is very vulnerable is of the most importance for the sustainability of the natural value.

2.3 built elements

To upgrade the natural values as much as possible, I investigated three possible architectural interventions in the dune landscape that would have a minimal negative impact on the area. These three interventions are buildings in the dunes (for example the bunkers in World War 2), as an extension of the landscape (for example man-made inhabited dunes) and independent of the landscape (for example platforms above the dunes).

I chose for the development with the smallest ecological footprint and used a drilling platform to achieve this goal to minimise the impact on the natural values of the area, and under which the natural development can take place undisturbed by the platform.



Figure 4: Drilling platform near Inverness, Scotland. Natural development can proceed independently of the structure.

3. UPGRADING RECREATION VALUES

The recreational values are besides the natural values an important aspect of the Dutch coastal zone. The recreational values consist of three important aspects on this location; the beach, the dune landscape and the built elements.

3.1 the beach

This aspect of the Dutch coastal zone has an implicit recreational value that needs no adaptation. Sand and sea have a natural attraction that does not need added value. Important to state is that the recreational value of this aspect depends on a minimum natural value consisting of a clean beach and water.

3.2 the dune landscape

By creating an area where seawater can enter the dune landscape, not only the natural values increase, but the recreational values are increased as well. The realisation of a sustainable harbour for recreational sailing yachts would result in a zone where the recreational values are even further increased. In this zone natural and recreational elements will interact in a win-win situation, because the values of both depend on each other. In the harbour itself, parts of the walking paths are placed in locations that the use of them depends on the height of the sea level, in which way visitors are directly confronted with the natural circumstances.

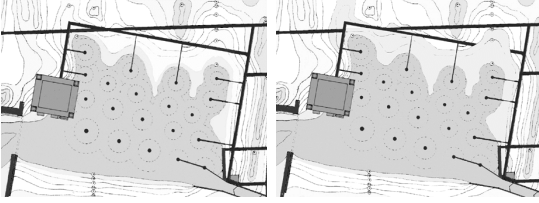


Figure 5 and 6: The use of the path in the harbour depends on low and high tide.

3.3 built elements

The hotel that is situated in the zone will attract tourists and in this way increases the recreational value of the area. By its architecture it will fulfil a landmark function. The yachts themselves are moored to independent placed harbouring platforms, creating a recreational aspect on mooring in respect of the natural circumstances.

A positive side effect is that the increased recreational values create an economic impulse that can contribute to the financial base for the conversion of the area.

4. RECYCLE TO THE MAX

To recycle to the max, it is not only important to focus on using used materials, but to focus on the total chain of material, existing of three phases; past, present and future.

4.1 past

I focused on re-using as much materials as possible. As already described, I recycled a drilling platform and transformed it into a hotel. Drilling platforms are very well suitable for the harsh environment of the Dutch coast, and are often still in a very good technical state when they are not necessary anymore for their original purpose.

4.2 present

I used the system of the IFD building method to transfer the platform into a hotel to cope with my recycling targets. IFD stands for Industrial, Flexible and Demountable. Industrial produced elements lead to a flexible result, and are demountable in the final phase. This building method results in less waste in the production phase and in the demolition phase, due to the recycling of building materials.

A drilling platform possesses already some very important aspects of this method. The platform can be literally seen as a platform on which elements needed for drilling are placed.

I replaced all these elements with a wooden mainframe in which the hotel function is placed. A hotel has a lifespan of about 20-25 years after which it has to be refurbished. In the design, the hotel rooms can be easily removed and replaced by refurbished hotel rooms, because they are placed as individual boxes in the frame.

4.3 future

In the mainframe, not only hotel rooms can be placed, but also the elements can be replaced by other functions, or can be left open. In this way, the drilling platform can be re-used in many ways.

And in the long run, when the structure will lose its right to exist, the legs can be jacked up, and the platform can be towed away leaving no footprint. The following illustrations show the recycling to the max of a drilling platform in 5 steps.

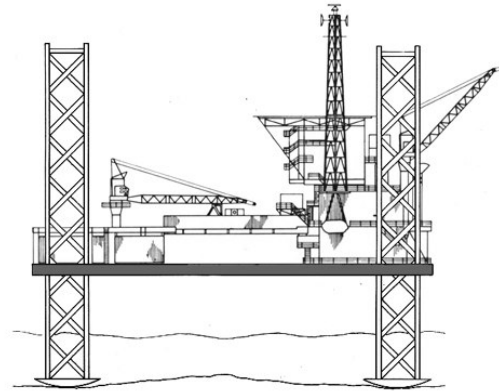


Figure 7: The original platform.

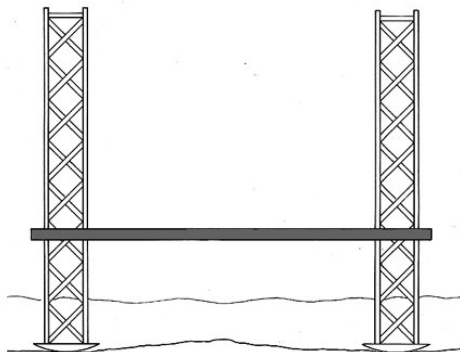


Figure 8: The stripped platform.

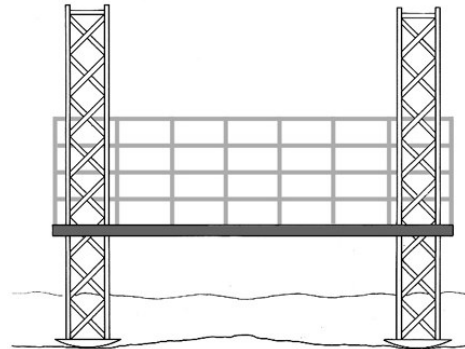


Figure 9: The platform with the new mainframe.

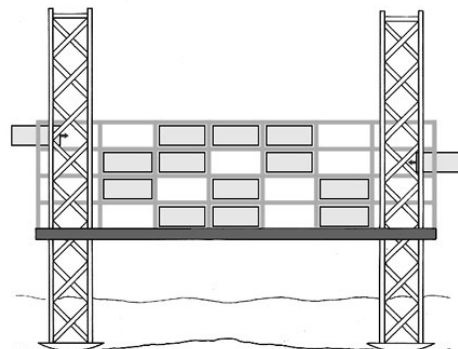


Figure 10: The platform with the new hotel function placed in the mainframe.

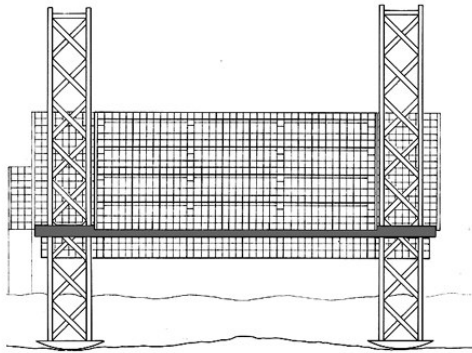


Figure 11: The new skin placed over the mainframe and hotel function.

In the yacht harbour, recycling of materials (wooden platforms and offshore pipes as mooring poles) is applied. But the most important recycle to the max is the use of the harbouring-platforms. These platforms, to which up to 8 yachts can moor, 'drift' in the bay, only positioned by some poles. These poles can be lift up, like the legs of the hotel platform, and in this way the harbouring-platforms can easily be relocated or removed.

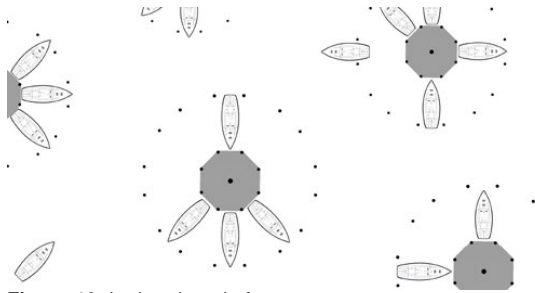


Figure 10: harbouring-platforms.

5. SUSTAINABLE ENERGY

I focused on making the hotel and harbour complex as self-sufficient as possible in combination with the natural and recreational context. To achieve this, I made a calculation of energy needed and possible sustainable energy sources. I used well-know sustainable energy sources (PV-panels, sun boilers, wind turbines, etc.) and implemented PV-panels and wind turbines as architectural elements in the hotel and harbour.

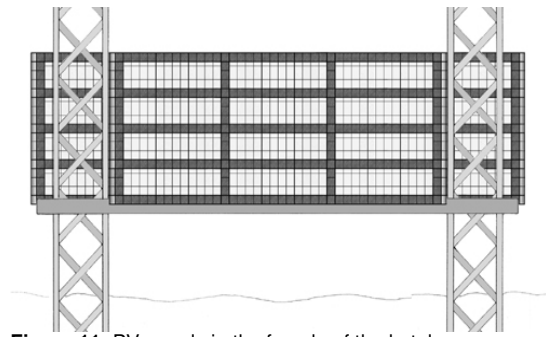


Figure 11: PV-panels in the façade of the hotel.

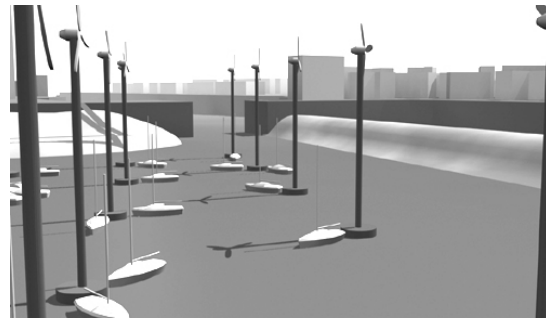


Figure 12: Windmills in the harbour.

CONCLUSIONS

It is obvious that sustainability should be implicit in our built and natural environment. Especially in vulnerable areas like the Dutch coastal zone sustainable solutions must be applied to solve the problems arising in our environment. In this paper, I made clear that by confronting the two environments with each other sustainability can create an extra quality and will result in a win-win situation for the environment and the people.

The last main value, the economic value, is however, the bottleneck. This is because both the design and the sustainable energy solutions are at this moment not profitable. In this project, the economic value can be upgraded by the attraction of investors and by the creation of jobs, but it is highly doubtful if this will solve the problem. More investigation and solutions on this aspect are asked for.

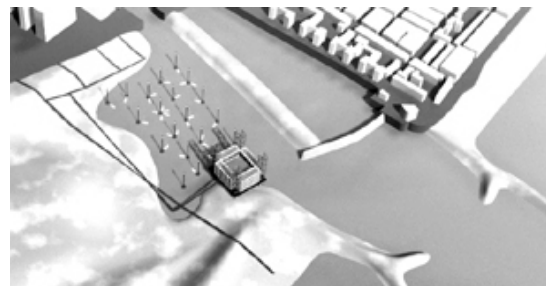


Figure 13: overview of the project.

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