

## Introduction

In 1865 the digging of the Noordzeekanaal through the Kennemerduinen was the start of the development of IJmuiden. In between 1865 and 2006, the region IJmond grew as the result of a manifold of local initiatives, yet without the guidance of an overall vision, and transformed into the fascinating urban region IJmond. This region has lots of local charm and variety, but can at the same time also be characterized by a lack of coherence. At the moment the potential offered by being rooted in the magnificent Kennemerduinen is not utilized well by the urban region.

Generating Dune Scapes sets a long-term transformation process in motion.

This plan presents the interventions of the first phase, which lasts 15 years. Every later phase of the development will generate an exciting urban dune landscape too. How these later phases will develop is unpredictable at the moment, but it is evident that they will benefit from the conditions and possibilities generated in phase one.

## Overall intervention: Large-scale dune generation

Dune generation realizes a unique symbiosis between the qualities of the Kennemerduinen and the urban region of IJmond. Biologists regard the The National Park Kennemerduinen as “the butterfly garden” of the Netherlands. It has an overwhelming palette of vegetation.

In order to realize large-scale dune generation, the soil's hidden potential will be used. The chalk-rich dune sand (“white gold”) is still present in IJmond but is currently covered by the city. Activating this soil offers the possibility for dune generation all over the existing urban area.

Importantly, dune generation implies a radical change of the context of the existing buildings. The many currently existing voids all over IJmond will be used for this at first. Future voids, temporary and permanent, will be re-colonized by the dunes as well. By removing a few decimeters of the ground, the chalk-rich dune sand upon which the existing IJmond was built comes free. Even the most trivial public space will become part of a coherent whole: the urban (Kennemer) dune landscape. This guarantees coherence. As the result of natural succession, the urban dune landscape will in the end match the vegetation belts of the Kennemerdunes: the outside dune, middle dune and inner dune (respectively drifting dunes, bush dune, forest dune). There is an important economic incentive for landowners to embrace this overall intervention: the costs of maintaining the generic dune vegetation are only a fraction of regular types of green.

## Gigantic developments

The location-specific interventions are surfing the giant waves of the existing external developments in IJmond. Important large scale developments for the next 15 years are:

- the enormous quantity of superfluous sand: 1.4 million m<sup>3</sup> a year in the the harbour and 3 million m<sup>3</sup> as a result of the realization of the large lock(see below);
- the sustainable re-use of the industrial heat of Corus / Crown van Gelder (establishment of the “Restwarmtebedrijf”; 2011);
- the redevelopment of IJmuiden's Rivierenbuurt (2006-2020); and
- the realization of the world's biggest lock (2013).

## Local interventions

These gigantic developments create opportunities for the existing elements, such as the bunkers and the dune lake, and for new exceptional forms of architecture, urban planning, ecology, recreation and economy. The ambitious size of the location-specific interventions is enabled by these developments. These are:

- Hot Spring and Steaming Bunkers (2011)
- Birds and Supertankers (2013)
- Sand Wall District (2006-2020).

### 1) Hot Spring and Steaming Bunkers (2011)

A Hot Spring will be located within the apocalyptic décor of the Hoogovens and Kennemerduinen.

Surrounded by steaming bunkers, the famous Dutch clouds and the (partly new) Kennemer dunes, the Hot Spring will be the hart of a unique winter bathing resort for health recreation in Western Europe.

The existing mineral-rich Kennemermeer is particularly suited for this special form of recreation. The dune

water will be heated by re-using the industrial heat (“restwarmte”) of Corus / Crown van Gelder. Under the influence of the Kyoto-treaty, the various levels of government are pushing for this sustainable re-use of industrial heat (source Regionaal Technologie Centrum IJmond, IJmuider Courant, 25 March, 2004). Transportation of this industrial heat is normally the most important cost-driver of re-usable industrial heat. Given the fact that the Hot Spring is located nearby the sources of this sustainable form of energy, the pipe line will be short (1-2 km) and the cost can be relatively low. More importantly even, the potential benefits for the local economy of the Hot Spring are highly significant. The transformation of IJmuiden into a winter bathing resort for health recreation (functioning all seasons) will generate employment and business opportunities in IJmuiden. The excellent reputation of the National Park Kennemerduinen will be an important intangible asset for the Hot Spring. With the increasing age of the Western European population, health recreation has an enormous potential. The pavilion, will shield the Hot Spring from the wind and drifting dunes. It will also function as a unique residence with view over the steaming lake and bunkers. Given the size of the pavilion the hotel located in the it will be able to host a large number of guests. The Kennemermeer will be extended in such a way that the bunkers will be located directly at the lake. The steaming bunkers with panoramic views over the Hot Spring are exceptional residences. In between the beach and the lake some gigantic new dunes will be created on top of the dune pavilion and a large parking facility for 8.000 cars (to be used by visitors of the beach as well). A part of the superfluous sand from entrance of the harbour will be used for these new dunes. Seepage water streams contribute to the continuous refreshment of the mineral-rich dune water in the Hot Spring. Around the Hot Spring the emergence of subtropical vegetation is expected over time.

Arriving by boat in the winter resort will be a sensation. The Schnellboot bunker will be uncovered and gets a central role in the network of public and private transportation over water, connecting various cities to the winter resort. Just arrived, visitors will walk through the impressive bunker and use the escalator to ascend a super dune of 45 meters high. Enjoying the magnificent view of the sea, the visitors walk to the Hot Spring, pier or beach. The rapid boat connection to Amsterdam will be enabled by a high speed boat lift on the narrowest spot on the complex of locks (the “Spuisluis”). This solution has the additional advantage of establishing a fast and direct connection between Amsterdam and IJmuiden beach.

## **2) Birds and supertankers (2013)**

White clouds of screeching sea birds indicate the presence of breeding colonies on the complex of locks. Paradoxically, at one of the most busily locations in IJmond already in the current situation protected bird species are breeding (Visdief, Kleine Stern, etc.). And that in between passing seatankers and cruise ships! The biggest enemy of these rare birds is the fox, but this animal does not dare to enter the huge lock. This unique situation will be exaggerated in 2013. Then the world’s largest lock will be realized and new dune dips with large breeding bowls will be created. Four locations on the lock complex have been carefully selected for this and their oval shape is attuned to the breeding preferences of the red list bird species.

This is an exiting use for the enormous quantity of sand that will become available as a result of the construction of this gigantic lock (Agenda Verkeer & Waterstaat: 2013).

## **3) Sand Wall District (2006-2020)**

New dunes will not only enrich IJmuiden’s existing living environment but also generate possibilities for exceptional architecture. A sunken landscape of sand walls surrounded by deep green maritime pine trees creates a spectacular and ever changing living environment.

Already in the currently existing plans, a part of IJmuiden’s district Rivierenbuurt will be demolished and redeveloped (Agenda Gemeente Velsen, 2006-2020). In Generating Dune Scapes this process demolishing will be intensified. That creates space for new dunes. A part of the available sand surplus will be utilized for creating the conditions for large-scale dune living. The radical change of the context of the existing buildings, realized by the urban dune scape (see overall intervention), invites new forms of architecture and urban planning. Using GeoDelft’s innovative and well-tested construction method ‘SmartSoils’, the new Sand Wall District will be generated. This technique can be used to harden the dune sand on a large scale into sand stone of a quality that satisfies the stringent construction requirements.

The wind continuously changes the shapes of the unplanted and unhardened dunes, creating a dynamic and playful interaction with the steady sand walls, which will be more or less exposed depending on the dune sand dynamics. As a result of the dune’s relief, everyone will enjoy dune view. The traffic organization of the area is realized primarily by means of transportation suitable for this sandy terrain, such as SUV’s, which can be parked in front of the door. In between the sand wall houses the unique landscape of the