RAAAF

[Rietveld Architecture-Art-Affordances]

A seemingly indestructible bunker with monumental status is sliced open. It opens up the minuscule interior of one of NDW's 700 bunkers, the insides of which are normally cut off from view completely. In a radical way this intervention sheds new light on the Dutch and UNESCO policy on cultural heritage.

Paradoxically, after the intervention Bunker 599 became a Dutch national monument. Moreover our artwork is recently listed as UNESCO world heritage as part of the New Dutch Waterline.

The project lays bare two secrets of the New Dutch Waterline (NDW), a military line of defence in use from 1815 until 1940 protecting the cities of Muiden, Utrecht, Vreeswijk and Gorinchem by means of intentional flooding. In addition, a long wooden boardwalk cuts through the extremely heavy construction. It leads visitors to a flooded area and to the footpaths of the adjacent natural reserve. The pier and the piles supporting it remind them that the water surrounding them is not caused by e.g. the removal of sand but rather is a shallow water plain characteristic of the inundations in times of war.

Link to four minute movie:
goo.gl/ysKDEh

In full collaboration with Atelier de Lyon.

> Photo: Allard Bovenberg

Bunker 599

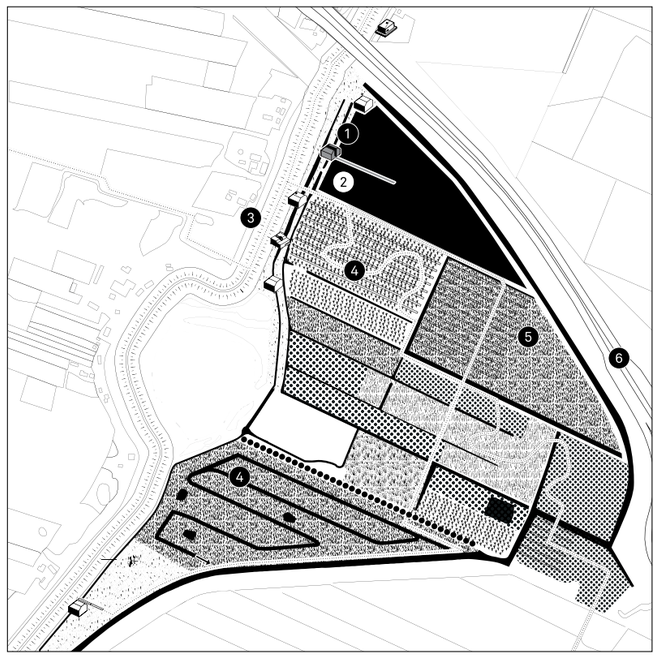
New Dutch Waterline

RAAAF | Atelier de Lyon

80 km open area

Access lines

New Dutch Waterline becomes a landscape park for the 21st century at the East side of the Randstad



1 Inundation field / Flood plain *

2 Bunker 599

3 Bunkers + Shelters

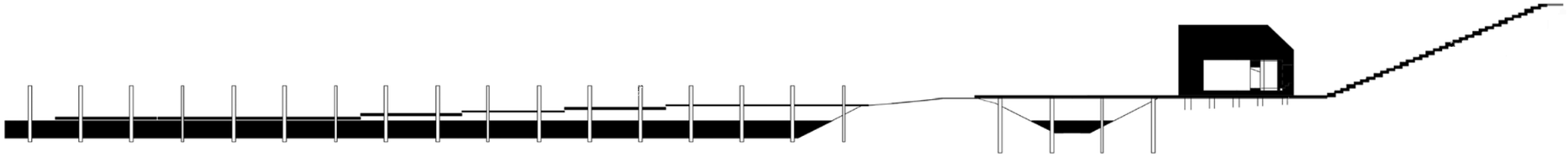
4 Wetlands

5 Marshland

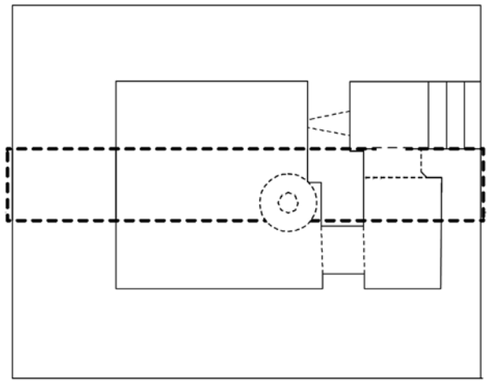
6 Highway: A2

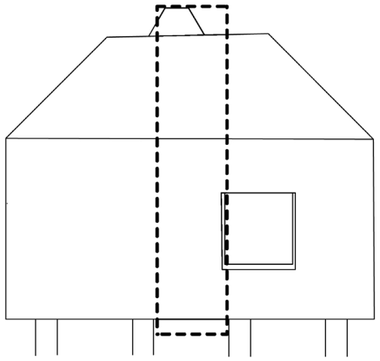
*In case of extreme rainfall 155.000 m^3 rain water from surrounding urban areas can be stored here temporaraly.

The New Dutch Waterline is a giant open structure at the East Side of The Randstad, Holland (80 km). With 44 fortresses, 400 bunkers and numerous waterworks, it is becoming a landscape park for the 21st century. The new floodplain and nature area around bunker 599 combine the potential of the cultural heritage with contemporary water management. The project creates public accessibility of the New Dutch Waterline at a strategic location along the main highway through the Netherlands.

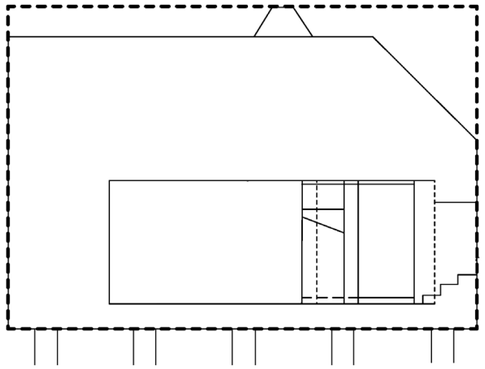


Cross section from dike to inundation field / flood plain



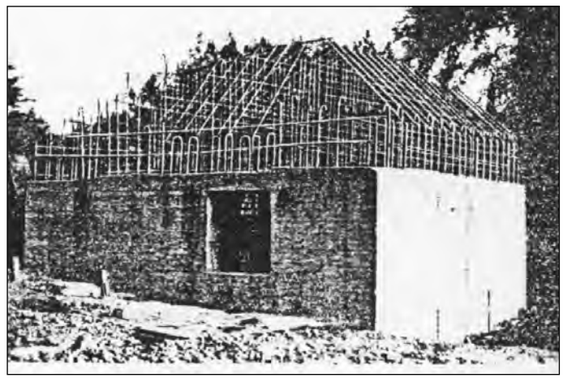


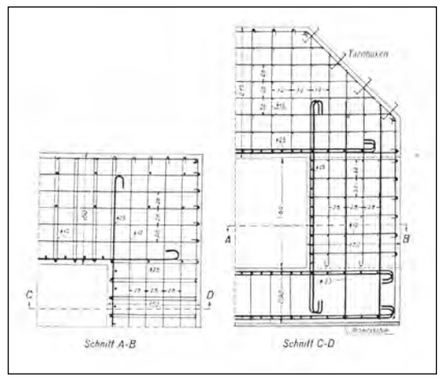
Front view



Cross section

Object discription:	Bunker Type P
Construction date:	1939 - 1940
Size:	8.20 x 6.50 x 4.85 meter
Concrete class:	W 21- 28 class
Occupation:	11 people
Location:	NDW, Culemborg





Teams of specialized crafstmen are actively involved in the process of making our artworks. Specialists include firemen, brass founders, master carpenters, church bell makers, styrofoam cutters and crane operators. Finding excellent craftsmen is necessary for realizing the artworks and crucial for the quality in materialization that we strive for.

Many of our interventions are about articulation of the void by taking things away. In a world filled with stuff such a 'poetry of absence' is crucial.

Reviews of

The Journal of the American Institute of Architects, 2013
— Aaron Betsky

> "What interests me in particular about the firm's work is that they have chosen to make or propose exactly the kind of projects I think are so vital for the development of our built environment.
>
> In all their work, the Rietveld brothers make use of the power of what is empty, unused, or gone. Perhaps it is because of Ronald's landscape perspective, but what they offer is simple, yet invaluable. Rather than ignoring what does not point to itself as a showy structure; rather than filling voids; and rather than forgetting a past that might trouble us, they show us how we can find ways to make us aware of what is not. In the voids we can find what might be missing in a world so filled with stuff and images. RAAAF is bringing a necessary poetry of absence to a world of built clichés and unnecessary objects."

Jury Architectural Review Award 2013 - Emerging Architecture
— Sir Peter Cook, Manuelle Gautrand, Eric Owen Moss, Catherine Slessor

> "Split Infinity, a bisected pillbox on the bank of a dyke opens a way through the sometimes impenetrable memories of war to a future of broader horizons."
>
> "Despite the project's small scale, it is very powerfull. It has a mix of delicateness, strength and impertinence, wich is rare to observe, and is cleverly inserted in the site linking landscape and water. It clearly stood out because of its simplicity, beauty and capacity to situate itself between art, landscape and architecture."

Metropolis Magazine NYC, New Talent issue, 2015
— A.J.P. Artemel

> "The union of design and philosophy results in strangely poetic, if haunting, projects. For Bunker 599, RAAAF, together with Atelier de Lyon, cut a concrete 19th-century pillbox in half, revealing its amped interior spaces and metaphorically reopening a closed chapter of Dutch history."

> Photo: Rob 't Hart

Vacant NL is the Dutch contribution to the Venice Architecture Biennale 2010, in which the potential of 10.000 governmentally-owned vacant buildings was shown. This architectural installation calls upon the Dutch government to make use of the enormous potential of inspiring, unoccupied buildings from the 17th, 18th, 19th, 20th and 21st centuries for innovation.

RAAAF composed a multidisciplinary team to develop the installation: Jurgen Bey (industrial designer), Joost Grootens (graphic designer), Ronald Rietveld (architect), Erik Rietveld (Fellow in Philosophy at Harvard University), Saskia van Stein (project leader NAI), and Barbara Visser (visual artist).

Vacant NL got media attention worldwide and has led to many follow-up projects. This shows that vacancy is a giant and international challenge for the profession of architecture. The renowned Sandberg Institute (Gerrit Rietveld Art Academy, Amsterdam) has invited us to develop a Master Program to educate specialists in temporary re-use of vacant buildings: the two-year Master Vacant NL, which started in 2011. In 2014 RAAAF published a book to share our experiences on this topic with the international public and launch the novel professional and academic field of Vacancy Studies. Its title is Vacancy Studies: Experiments & Strategic Interventions in Architecture.

Vacant NL

Venice Architecture Biennale 2010

Dutch pavilion, Giardini Venice

Invitation Vacant NL 2010, curated and designed by RAAAF

The groundfloor was left completely empty. this refers to RAAAF's discovery that the pavilion is on Dutch soil (in Venice) and is also a public and governmental building that already has been vacant for 39 years (7 months a year). As a conceptual statement and spatial experience, the pavilion itself becomes part of this total installation.

The Dutch Atlas of Vacancy, which was part of the installation, shows the infinite range of possible temporary uses of 10.000 governmental and public buildings and places. They are not uniform but in fact very diverse, because they were once designed for specific purposes: lighthouses, hospitals, water towers, factories, airports, hangars, offices, rehabilitation centres, fortresses, bunkers, schools, prisons, swimming pools and many more.

The Dutch Atlas of Vacancy links our national vision behind Vacant NL to the local qualities of each individual building in the installation. Apart from the qualities of a building itself, every building has a context that largely determines its possibilities for particular types of use: the potential uses for a building in Amsterdam, for example, would be completely different for an identical building in Berlin. For the development of knowledge, it is important to consider a building's creative ecology, the knowledge network within which a building or plot of land occupies a particular position.

A clear analysis of this creative ecology can contribute to identifying and developing an interesting, location-specific programme. A striking example of what this way of thinking can really offer is project Secret operation 610 in this portfolio.

Reviews of
Vacant NL (selection)

The New York Times, 2010

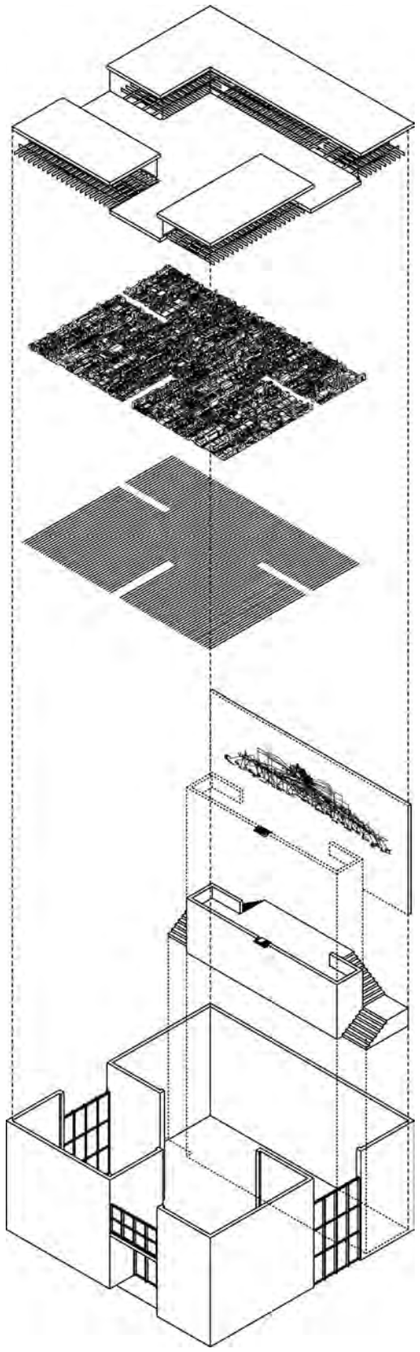
"Another highlight is the Dutch Pavilion. The makers of the installation [...use] cheeky math to introduce their striking research into vacant state-owned buildings in the Netherlands. Every one of the more than1,000 empty buildings was rebuilt as a miniature blue foam model and suspended from the pavilion's double-height ceiling. The curators […] propose to develop a strategy for temporary use, to make these buildings available to the public, particularly to the creative industries on which the Dutch government is banking its future prosperity."

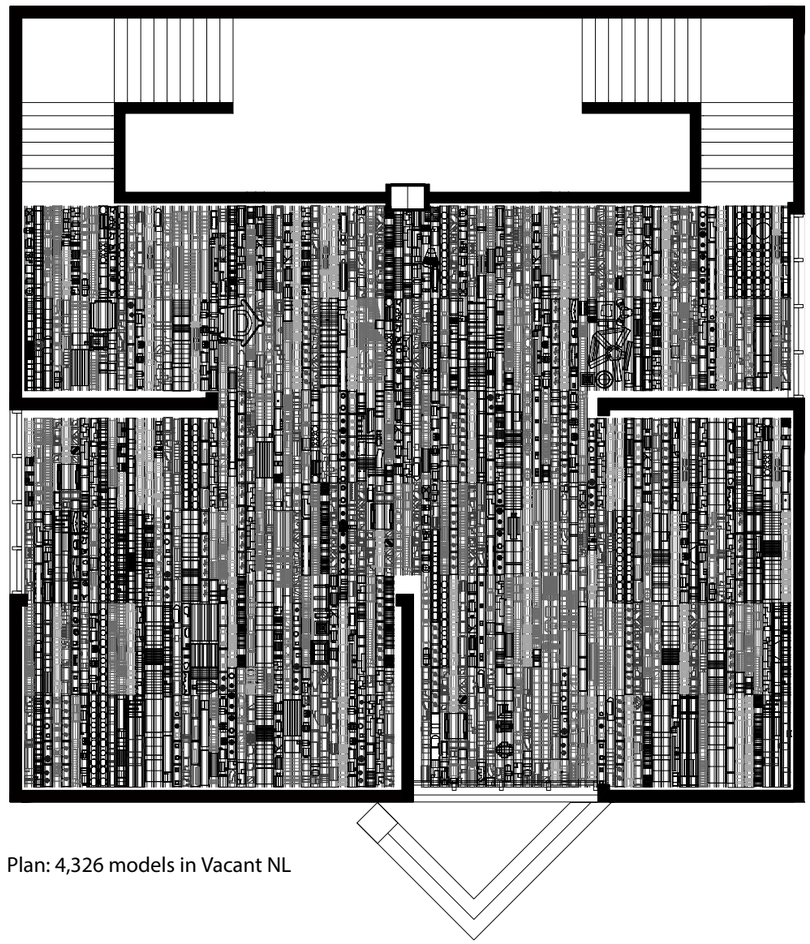
The Wall Street Journal, 2010

"The Dutch, Japanese and French national entries each examine the notion of the void in modern cities. The Netherlands pavilion does it in the most straightforward manner, simply pointing out that the building lies empty for almost nine months of the year. As you enter an empty room, there is a suspended blue foam ceiling that, when one proceeds to the upper level, turns out from above to be a model of a city. It provides a neat visual example of the percentage of empty space in European urban spaces."

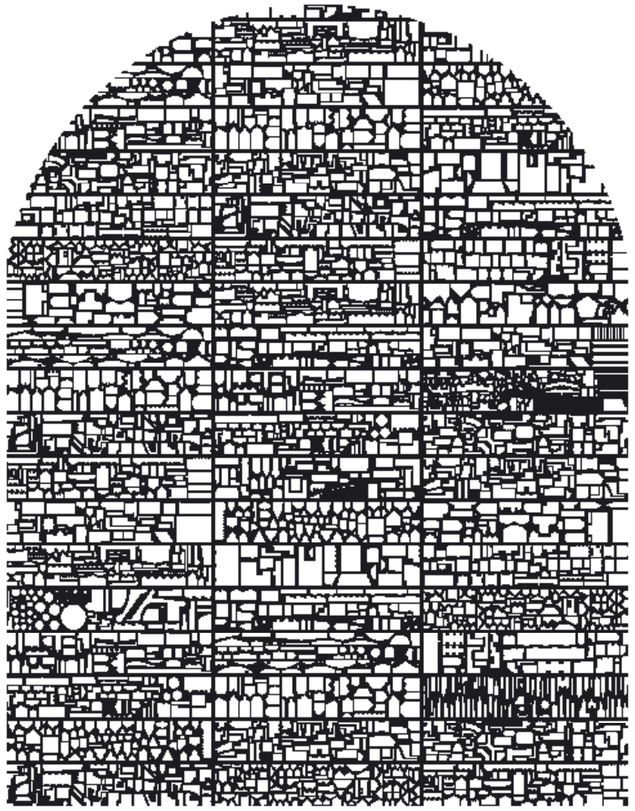
The Guardian, 2010

"The Dutch present models of empty buildings highlighting the gormless enormity of architectural waste; how we concrete over anywhere we can for short-term gain, while governments prattle on about sustainability and building shortages."





Plan: 4,326 models in Vacant NL



The installation Pretty Vacant by RAAAF encourages visitors to take a fresh look at the empty spaces of the Centraal Museum. The blue window literally and figuratively sheds a new light on the space and complements the architecture of this medieval chapel. The window is based on the negative spaces of RAAAF's earlier installation Vacant NL, which was the Dutch submission for the Venice Architecture Biennale in 2010. The installation in the Gerrit Rietveld-designed pavilion in Venice showed the enormous potential of 10,000 disused public buildings in the Netherlands from the seventeenth to the twenty-first century.

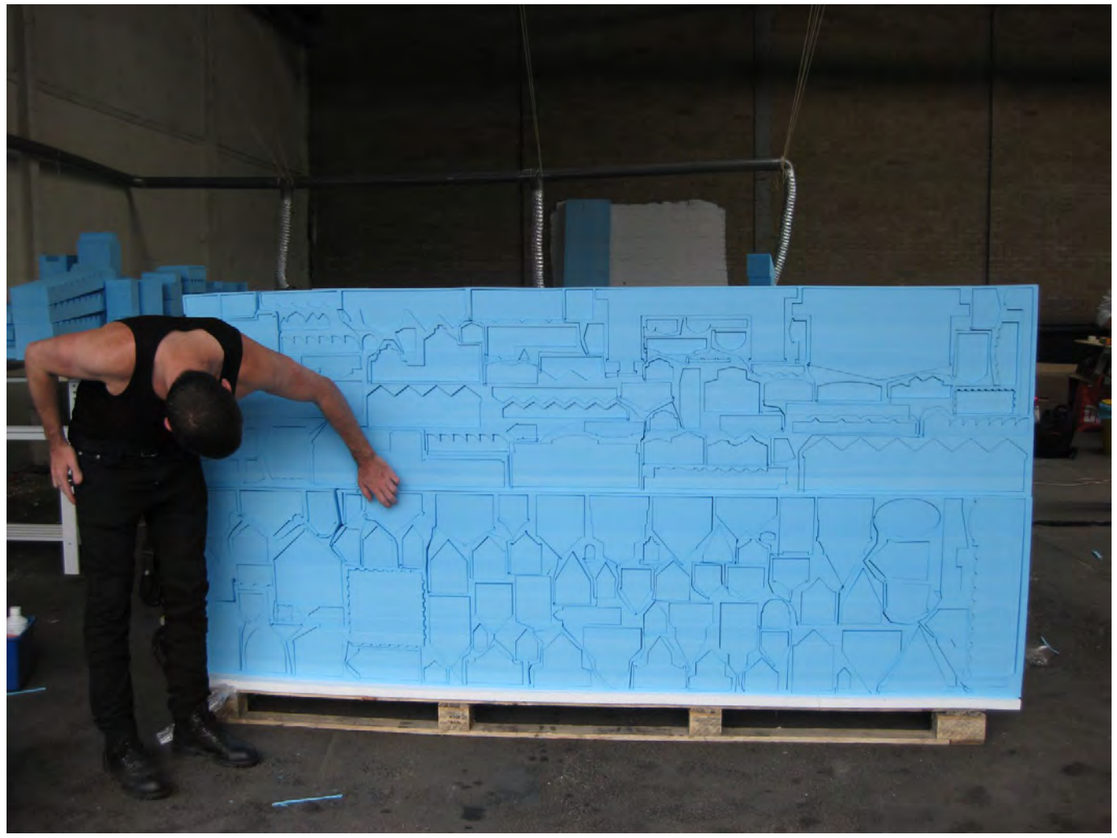
The Centraal Museum aims to acquire work of what its director Edwin Jacobs calls “new-thinkers in images” at the intersection of art and architecture. Through the acquisition of this installation by RAAAF with support from the Mondriaan Fund, the Centraal Museum has realized its ambition of adding Vacant NL to the Collectie Nederland.

> Photo: Rob 't Hart

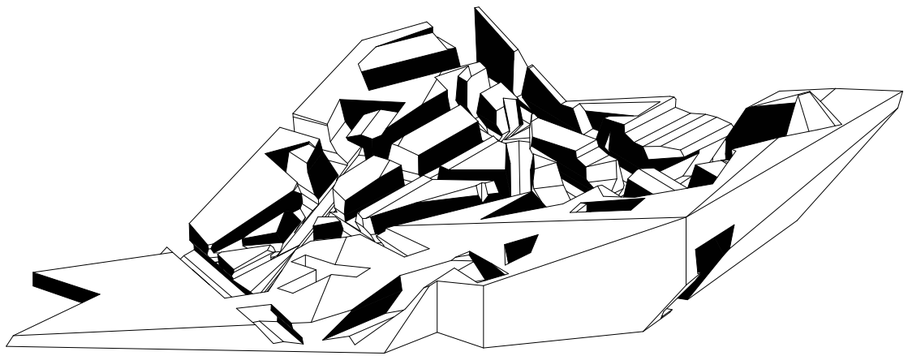
Pretty Vacant

Centraal Museum Utrecht


PRETTY VACANT



Residual material installation Vacant NL The material is used for this new site specific installation in the Centraal Museum, The Netherlands.



The End of Sitting is an installation at the crossroads of visual art, architecture, philosophy and empirical science. In our society almost the entirety of our surroundings have been designed for sitting, while evidence from medical research suggests that too much sitting has adverse health effects.

RAAAF [Rietveld Architecture-Art Affordances] and visual artist Barbara Visser have developed a concept wherein the chair and desk are no longer unquestionable starting points. Instead, the installation's various affordances solicit visitors to explore different standing positions in an experimental work landscape. The End of Sitting marks the beginning of an experimental trial phase, exploring the possibilities of radical change for the working environment of 2025.

Link to movie:
goo.gl/AygwPB

> Photo: Jan Kempenaers

The End of Sitting is made in collaboration with Barbara Visser.

The End of Sitting

Looiersgracht 60, Amsterdam


ODEN TE ROOKEN

Impact
beyond architecture

The impact of our projects goes far beyond the profession of architecture. The installation The End of Sitting for example has been covered by 40 international newspapers, several international television stations including CNN, Canal+ and CBS News, and top academic journals in a variety of scientific fields: for example, epidemiology, sports medicine, human movement sciences, ecological psychology, and philosophy.

We hope it will be clear that our work in general is not about the fashionable but about long-term visions for our living environment. Our built interventions are real-life material thinking models for the future.

Reviews of

Financial Times, 2016

"Much contemporary workspace is the result of lazy thinking and is making us ill… RAAAF recently proposed a radical, conceptual alternative."

Wired USA, 2015

"The Weirdest Proposal Yet for the Office of the Future. RAAAF turned in blueprints for 'The End of Sitting', a glacier-like series of boulders and surfaces that would replace traditional office furniture. The maze-like series of angled and tapered frames create an infinite number of leaning spots, for workers of any height."

The Huffington Post USA, 2015

"In The Office Of The Future, You Will NEVER Sit Down. We all know that sitting at a desk all day can kill. So what if we just banned chairs at work altogether? The experiment took things a step further by actually hosting real workers over several days. The professionals performed a variety of tasks, including designing, writing and sketching."

Medical Daily, 2015

"Office Space Reimagined: 'The End Of Sitting' Art Installation Offers an Alternative. Maybe we'll never see — or live to see — workspaces reimagined in the way 'The End of Sitting' shows, but the premise is striking."

Harvard Design Magazine, 2015

"From studies on affordances in dynamic systems theory we know that offering a large variety of affordances can help create an environment that invites roaming withina certain area."

Metropolis Magazine NYC, 2015

"The studio presented a 40-foot 'cutout' of The End of Sitting at this year's Chicago Architecture Biennial, and is working on yet another revelation, this time underground.... In the end, the genius of RAAAF is in its strategic interventions that, though small, invite viewers to imagine a completely different way of living."

Sports Med
DOI 10.1007/s40279-015-0448-y

ORIGINAL RESEARCH ARTICLE

'The End of Sitting': An Empirical Study on Working in an Office of the Future

Rob Withagen[1] · Simone R. Caljouw[1]

Abstract

Background Inspired by recent findings that prolonged sitting has detrimental health effects, Rietveld Architecture Art Affordances (RAAAF) and visual artist Barbara Visser designed a working environment without chairs and desks. This environment, which they called The End of Sitting, is a sculpture whose surfaces afford working in several non-sitting postures (e.g. lying, standing, leaning).

Objective In the present study, it was tested how people use and experience The End of Sitting. Eighteen participants were to work in this environment and in a conventional office with chairs and desks, and the participants' activities, postures, and locations in each working environment were monitored. In addition, participants' experiences with working in the offices were measured with a questionnaire.

Results It was found that 83 % of participants worked in more than one non-sitting posture in The End of Sitting. All these participants also changed location in this working environment. On the other hand, in the conventional office all but one participant sat on a chair at a desk during the entire work session. On average, participants reported that The End of Sitting supported their well-being more than the conventional office. Participants also felt more energetic after working in The End of Sitting. No differences between the working environments were found in reported concentration levels and satisfaction with the created product.

Conclusion The End of Sitting is a potential alternative working environment that deserves to be examined in more detail.

Key Points

Recently, an office has been designed that lacks chairs and tables but consists instead of (slanted) surfaces that afford people to work in several non-sitting postures (e.g. standing, leaning, lying).

This newly designed office invites movement while working—83 % of participants worked in different non-sitting postures at different locations, giving rise to locomotion.

The 'new' office supported the well-being of participants more so than a conventional office, and had no negative effects on reported concentration levels and satisfaction with the produced work.

1 Introduction

In the fall of 2014, Rietveld Architecture Art Affordances (RAAAF) and visual artist Barbara Visser realized a temporary office of the future in an exposition space in Amsterdam, The Netherlands. They were inspired by an article in the newspaper mentioning Hidde van der Ploeg's scientific work on the negative health effects of sitting

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The End of Sitting: How middle-aged employees use and experience a new activity-inducing office over time

S.R. Caljouw*, E.H. de Haan, N. Mollee, R. Withagen
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Activity-inducing landscapes

ABSTRACT
Rietveld-Architecture-Art-Affordances acknowledged the public health concern of sitting too much and developed The End of Sitting—a workspace without chairs that provides a variety of supported standing positions. In the current study middle-aged office workers were to use the End of Sitting for one hour per week over a ten-week period. Over time, participants reduced their changes between locations in one session while working, yet they still worked in different locations and postures at the final work sessions. In addition, we found that the self-reported office task performance (concentration, quality of work, productivity), mood (energized, well-being, pleasantness) and postural comfort were not negatively affected by working in this new office environment compared to their conventional workplace. This indicates that the End of Sitting should be taken seriously as an alternative office for regular office workers.

1. Introduction

Many office workers spend the majority of their working hours sitting, often in prolonged unbroken bouts (e.g., Buckley et al., 2015; Parry & Straker, 2013). In response to the evidence on the adverse health consequences of extended sitting (e.g., Biswas et al., 2015), recent public health recommendations state the importance of reducing sedentary time and promoting regular changes in posture (e.g., Buckley et al., 2015).

Studio RAAAF (Rietveld-Architecture-Art-Affordances) acknowledged that the typical office design with its chairs and desks solicits sedentary behavior and therefore, created an activity-inducing work environment. As the name of the studio indicates, RAAAF is inspired by Gibson's concept of affordances. Gibson (1979/1986) introduced this concept to refer to the possibilities for action in a certain environment. Consequently, RAAAF conceives of architectural intervention as the creation of affordances—with their rock-like sculpture, called 'The End of Sitting' (EoS), they created a variety of possibilities for supported standing (see Fig. 1; see also Rietveld, 2016). Moreover, each location was designed to offer only temporary comfort to induce frequent postural changes. Ever since the introduction of this new office landscape, several empirical studies have tested its potential benefits (Caljouw, De Vries, & Withagen, 2017; Renaud, Huysmans, Spekkl, van der Beek, & van der Ploeg, 2017; Withagen & Caljouw, 2016). In the first observational study of the use of this workspace, Withagen and Caljouw (2016) indeed observed that most participants (83%) adopted more than one non-sitting posture at different locations when they worked in the EoS for 75 min. Contrary, in a conventional office, all but one participant worked sitting on the same chair for the whole work session. Interestingly, after working in the EoS, participants reported that even though their legs felt more tired, they also felt more energetic than after working in the regular office.

Although these results seem promising, the study of Withagen and Caljouw (2016) had two important limitations. First, the participants in that study were relatively young ($M = 21.7$, $SD = 3.0$), rendering it hard to generalize their findings to typical office workers. Second, the participants worked in the landscape for only 75 min. Hence, the postural changes and movements through the EoS that were observed in their study may simply reflect exploratory behavior to search for an optimal spot and may thus be a novelty effect. In the current study, we aim to overcome both limitations—we observed how middle-aged office workers used and experienced the EoS over a longer period of time. Although the office workers were to work in a smaller cut-out version of the original landscape, this cut-out also affords one to work in many different postures, allowing us to examine the behavior and experience of middle-aged office workers. Specifically, we explored the following research questions: How often do employees change location in EoS? Which locations do they use? How do they experience working in EoS? And most importantly, how do the office workers change in their use and experience of this new office environment over time?

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Journal of Enviromental Psycology, 2019

Sports Med (2016) 46:927–932
DOI 10.1007/s40279-016-0520-2

CURRENT OPINION

Situating the Embodied Mind in a Landscape of Standing Affordances for Living Without Chairs: Materializing a Philosophical Worldview

Erik Rietveld[1]

Published online: 17 March 2016

Abstract Sitting too much is unhealthy, but a widespread habit in many societies. Realizing behavioral change in this area is hard. Our societies promote being seated via the way its places are structured: they are filled with chairs for example. How can we make healthier environments that invite people to move around more? This article shows how philosophical research in the area of embodied/enactive cognitive science let to a built vision for the office of the future, of 2025. Multidisciplinary studio RAAAF [Rietveld Architecture-Art-Affordances] and visual artist Barbara Visser built this world without chairs, titled The End of Sitting. This large rock-like landscape integrates many affordances for standing. Affordances are the possibilities for action provided by the environment. This landscape of standing affordances allows people to work standing while being supported by the material structure of the environment. This unorthodox working landscape is both an enactive art installation and the materialization of a philosophical worldview that understands people as embodied minds situated in a landscape of affordances. It stimulates reflection on the way built environments can naturally invite more active and healthy behavior.

Key Points

In our many societies almost the entirety of our surroundings have been designed for sitting, while evidence from medical research suggests that too much sitting has adverse health effects.

The philosophy of embodied cognitive science suggests that the possibilities for action provided by the material environment structure our behavior. People can generate behavioral change by radically changing these environmental affordances in the places they spend their lives.

The architectural art installation The End of Sitting presents a thinking model for living without chairs: a landscape of possibilities for supported standing that increases bodily activity and well being.

1 Introduction

Office workers are addicted to sitting. We sit even though we read every day in the newspapers that "sitting kills" or that "sitting is the new smoking". We like the comfort of chairs and, in countries like The Netherlands, the United States and Australia at least, are living in a sitting society. We sit at the breakfast table, we sit in the car, we sit in the cinema, and we sit in front of our laptop computers. One scientific study on the sitting epidemic [7] followed over 220,000 Australians to investigate the relationship between sitting time and all cause mortality. It found that those who sit 11 h or more per day have a 40 % higher risk of dying in the next 3 years than those who sit 4 h or less. Even when

This article is part of the Topical Collection on Designing environments to enhance physical and psychological benefits of physical activity: A multi-disciplinary perspective.

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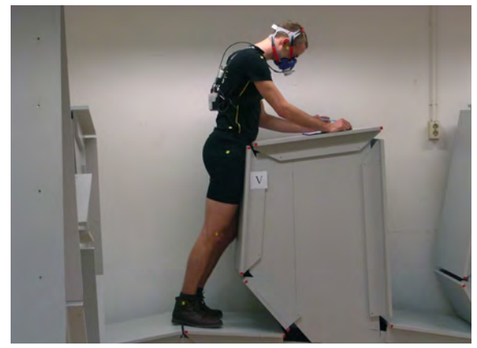
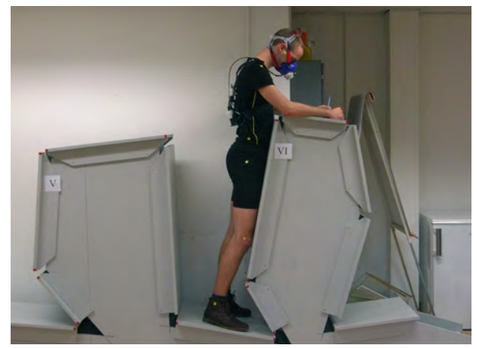
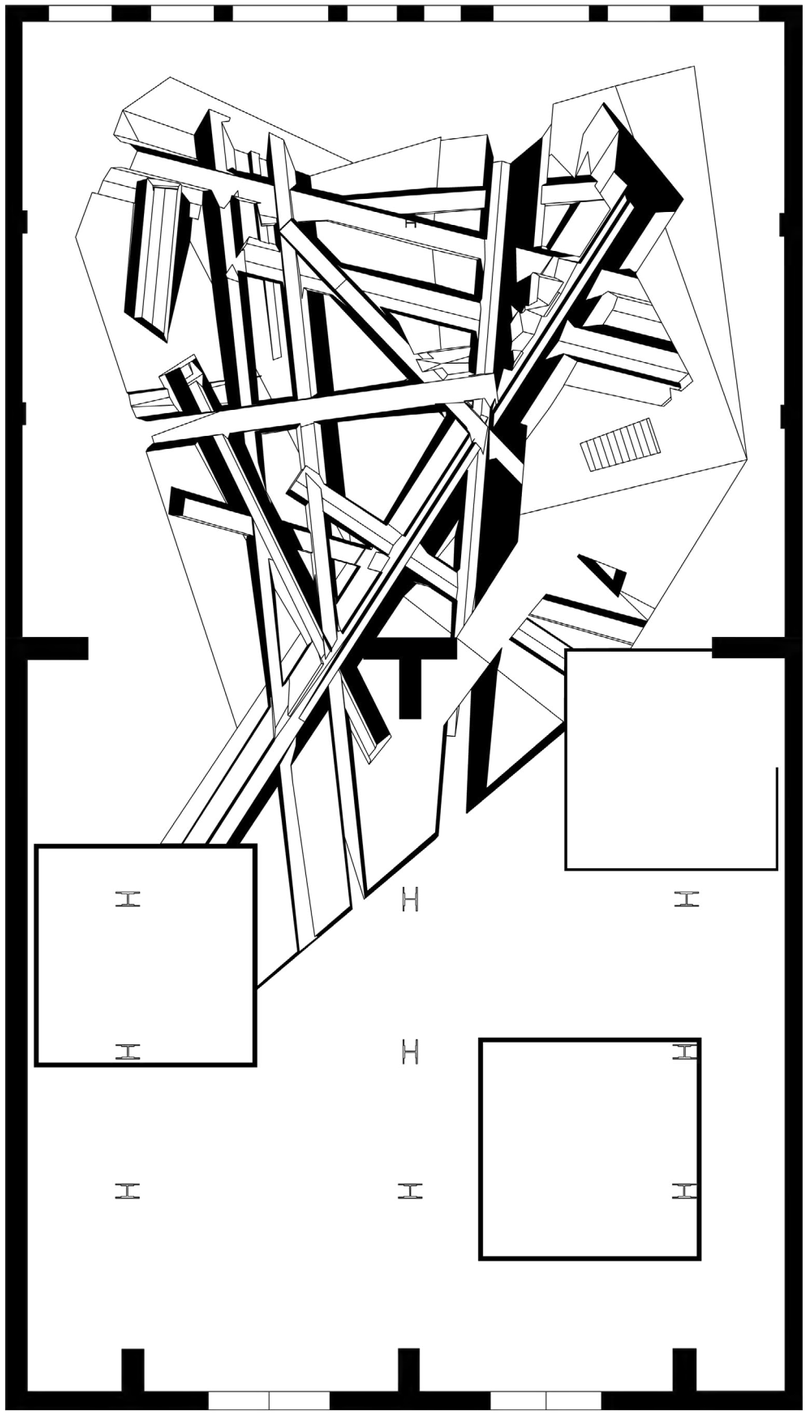
Sports Medicine Magazine, 2016

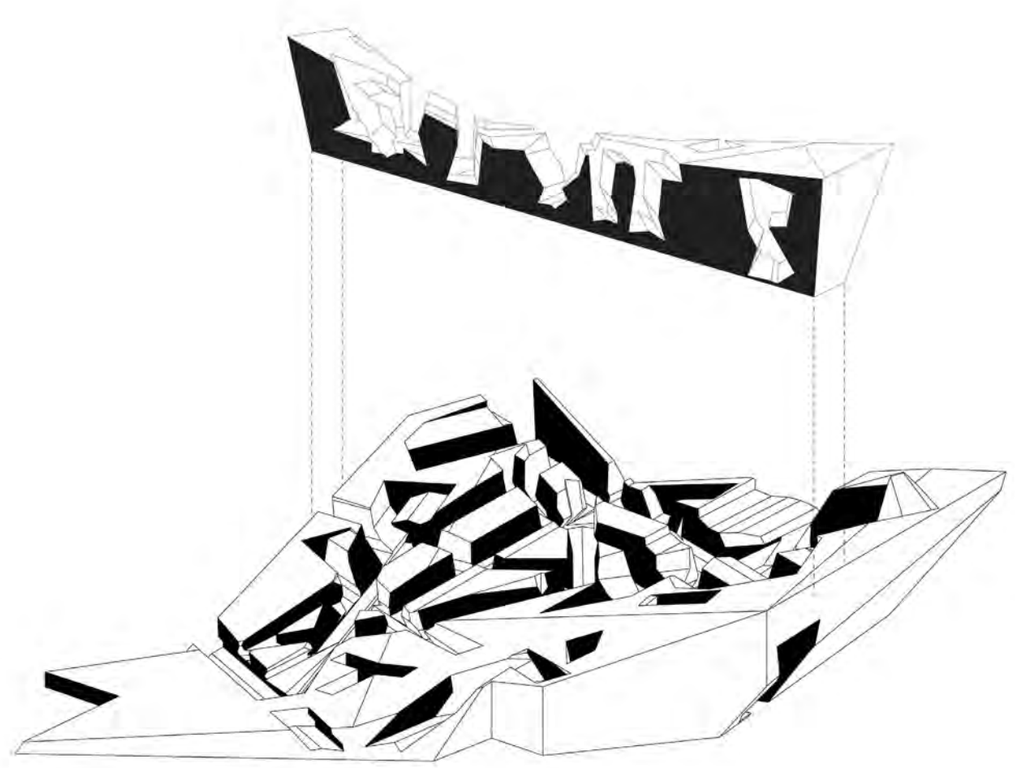




Scientific study on a mock up 1:1
Measuring energy consumption



Plan: The End of Sitting
Looiersgracht 60, Amsterdam



The End of Sitting 'Cut Out'
Inaugural Architecture Biennale Chicago USA, 2015

The End of Sitting 'Cut Out'
Inaugural Architecture Biennale Chicago USA, 2015

In 1998 (Larenstein, "Rivo 2100") and also in 2003 Rietveld graduated cum laude at the Academy of Architecture in Amsterdam with a plan for a "Green River', a nature area that very occasionally floods.

This bypass in the Dutch River delta becomes necessary urban void and nature area with protected "Roman Islands" surrounded by a new majestic dikepark.

Responding to local geography, urbanism and oriented on 12 historical churches this dikepark creates a 42 kilometer (!) long new urban front site (instead of planning the usual urban backsides). The surrounding dikepark is also an ecological corridor and sweet water reservoir for dry periods.

Green River

Arhnem - Nijmegen

Awarded at ARCHIPRIX 2004

Green River
Urban void and nature area surrounded by 40 km long dikepark: the new urban front site for Arnhem- Nijmegen

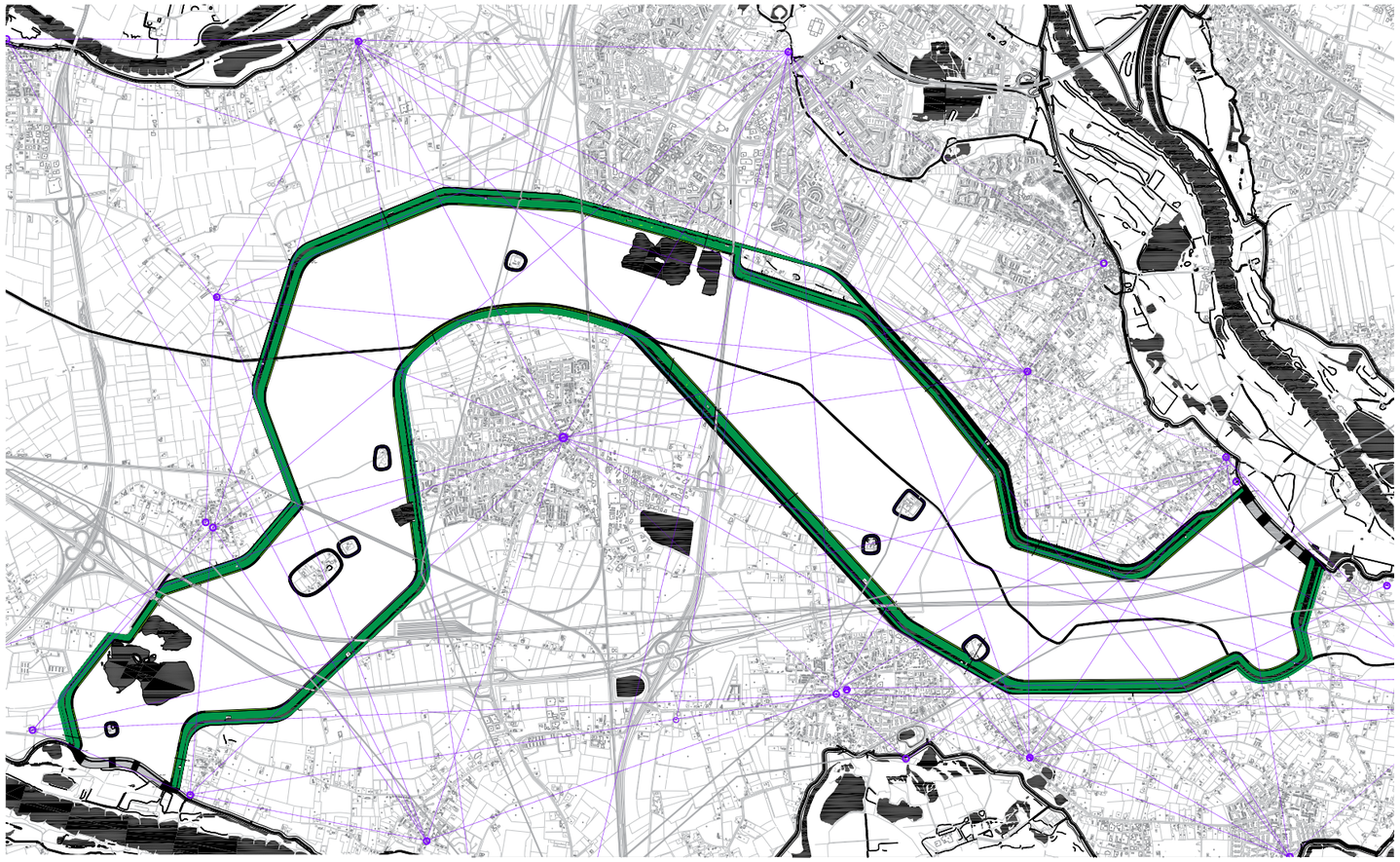
Graduation project Ronald Rietveld at Academy of Architecture Amsterdam
Awarded at ARCHIPRIX 2004 (best Dutch graduation plans)

Green river: nature area and urban void with historically protected “Roman Islands” in between Arnhem and Nijmegen. A new ecological architype with it’s own water dynamics.

The 42 km long dikepark is oriented on 12 historical churches and becomes the new frontsite for urban and ecological developments

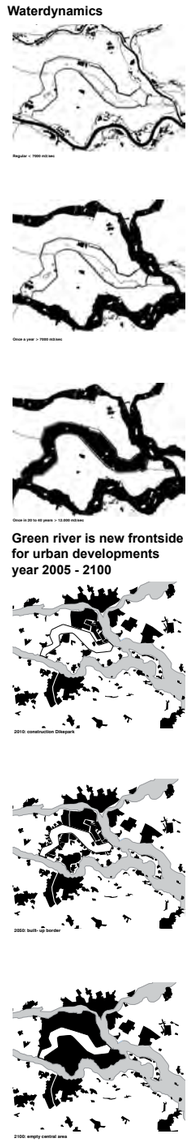
(image is a cut out from 200 - 300 meter cross section dikepark)

Green river is very occasionally flooded



The 42 km long dikepark becomes the new front site for urban and ecological develoments

A wide variety wide of ambiances, atmospheres and potentialities is generated by responding to local topography, cultural history and urban develoments. The dikepark is ecological corridor and sweet water reservoir for dry periods.



The brothers Ronald & Erik Rietveld grew up in the flooding areas of the Dutch Riverdelta. During great river floods in 1993 and 1995 their family was evacuated.

In 1998 (Larenstein, “Rivo 2100”) and also in 2003 Rietveld graduated cum laude at the Academy of Architecture in Amsterdam with a plan for a “Green River’, a nature area that very occasionally floods. This bypass in the Dutch River delta becomes necessary urban void and nature area with protected “Roman Islands” surrounded by a new majestic dikepark.

Responding to local geography, urbanism and oriented on 12 historical churches this **dikepark creates a 42 kilometer (!) long new urban front site (instead of planning the usual urban backsides)**. The surrounding dikepark is also an ecological corridor and sweet water reservoir for dry periods.

Generating Dune scapes is a transformation plan for the next 30 years. It reveals how nature and humans can live together by transforming a heavy industrialized area and creating new biobased living experiments, based on collaboration with Geo-Delft who invented a bacteria to create new sandstone technology.

Most of the opportunities offered by some gigantic natural forces, current urban developments and the Kennemerduinen in order to transform IJmond into a fascinating urban dune landscape.

The complex of locks becomes a landscape of paradoxes: various protected bird species will get breeding areas in new dunes between passing supertankers and cruise ships. A Hot Spring generated by residual heat will be located at the Kennemerduinen and anticipates on the era after the steel industry is disappeared.

The new dune landscape asks for novel forms of urban planning and inventive biobased architectural design, such as the ever changing Sand Wall District.

Generating Dune Scapes

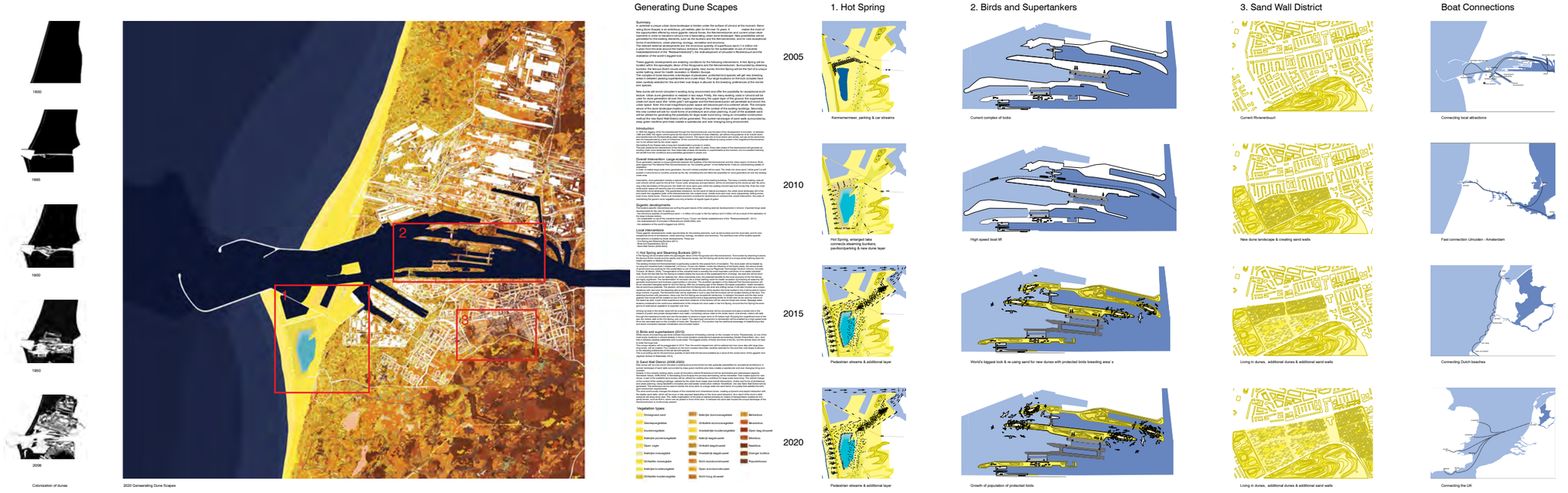
IJmond

Prix de Rome Architecture 2006 - first Prize

Generating Dune Scapes

A long term ecological and urban transformation plan that uses the opportunities offered by some gigantic natural forces, current urban developments and the Kennemerduinen.

PRIX DE ROME ARCHITECTURE 2006 - first prize (golden medal)



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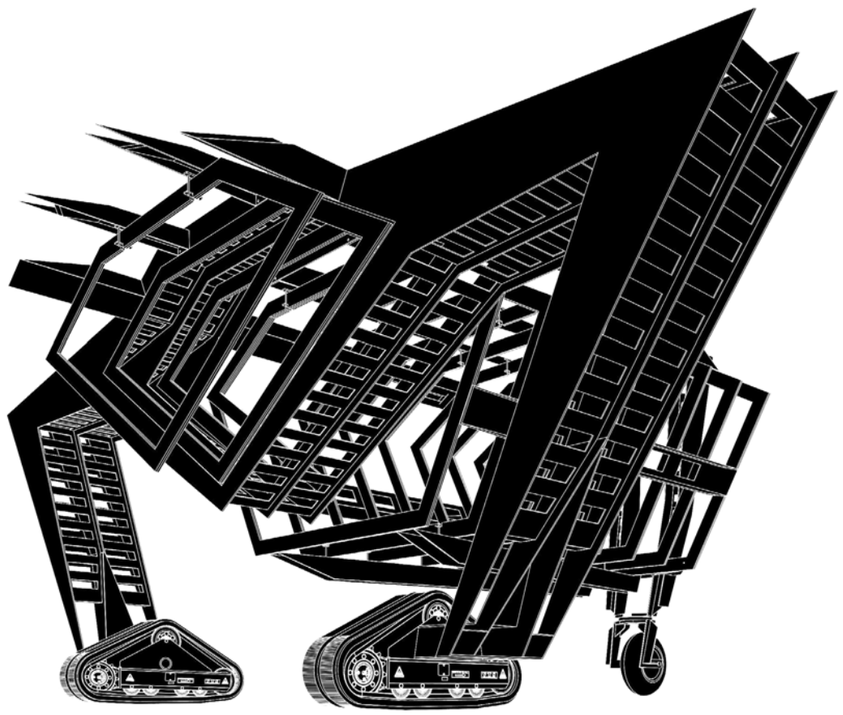


When aircraft Shelter 610 opens its ruthless doors, a monstrous black behemoth slowly comes driving out. The mobile sculpture revives the mysterious atmosphere of the Cold War and its accompanying terrifying weaponry. At an almost excruciatingly slow pace, the mobile sculpture uses its caterpillar tracks to explore the seemingly infinite runway. Due to this brutal object's constantly changing position in the serene landscape, it allows the visitor to experience the area and the history of the American NATO airbase in new ways.

At the same time, the mobile sculpture functions as a working environment for researchers. Their temporary stay creates opportunities for innovative research programs that otherwise would be impossible. For example, inside the object, researchers of the Technical University Delft (Aerospace / CleanEra) will develop a program for the innovative flying of the 21st century: “no noise, no carbon, just fly”. The old runway is the perfect test site for state-of-the- art aviation experiments.

Link to short movie:
goo.gl/3s2mKs

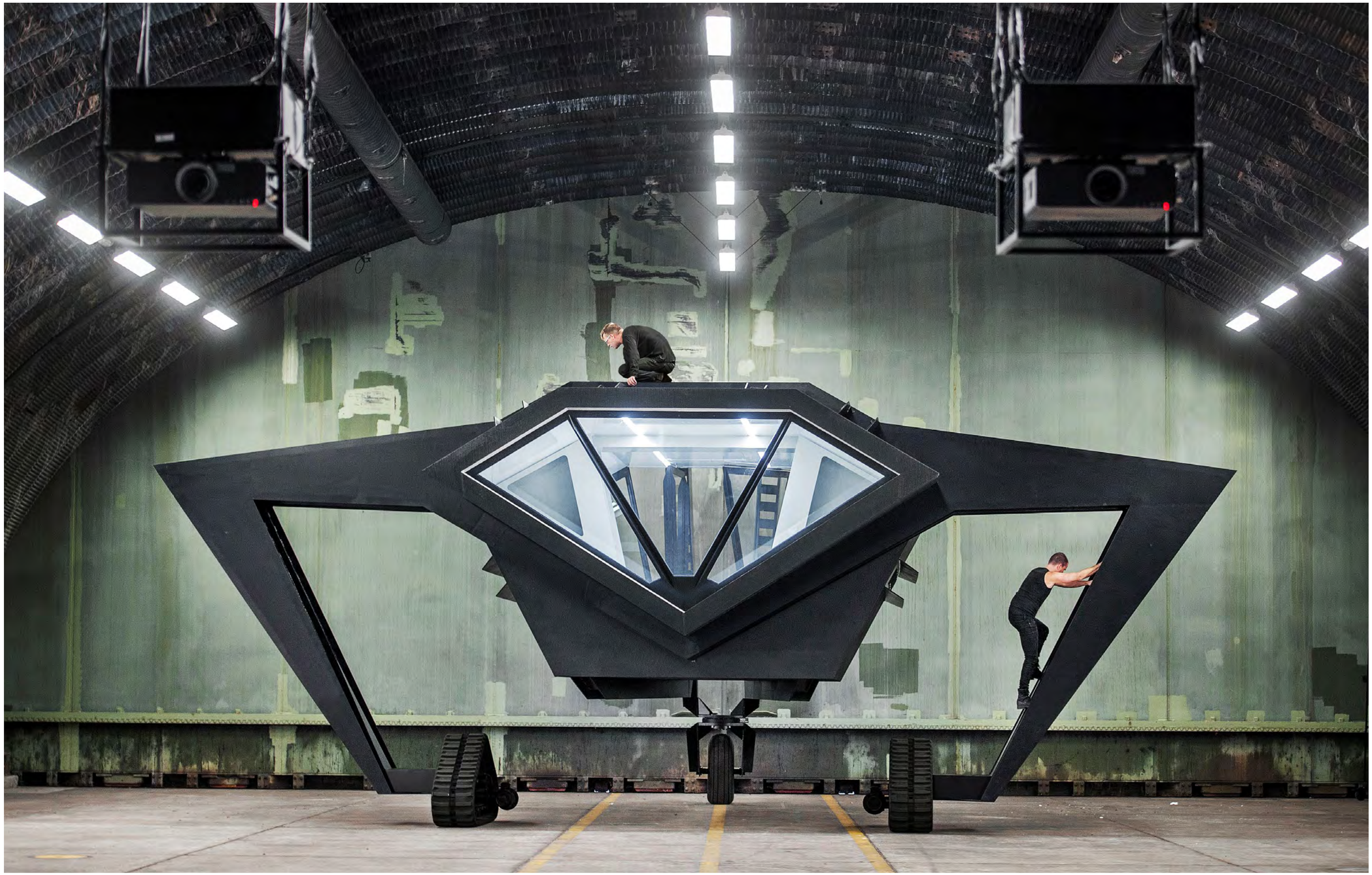
In full collaboration with Studio Frank Havermans.

> Photo: Raymond Rutting & Michel de Cleene

Secret Operation 610

American NATO Airbase Soesterberg

RAAAF | Studio Frank Havermans

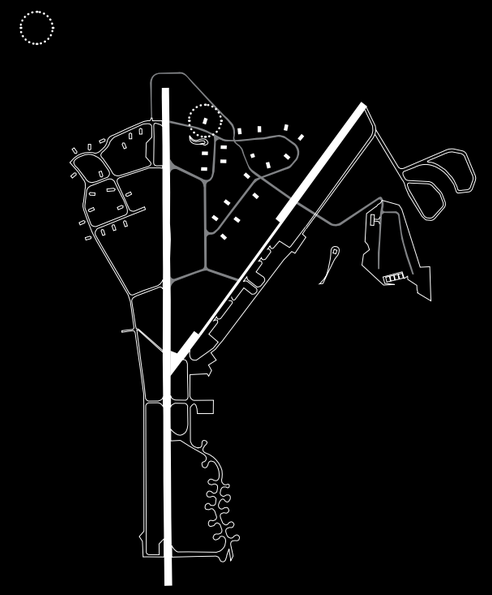


Secret Operation 610 is a Trojan Horse on an old military airbase which later became a nature reserve. It is a clear example of an strategic intervention, a precisly chosen and carefully designed intervention that sets new developmenst in motion. RAAAF in collaboration with TU-Delft Aeropspace transformed the conservative nature policies, where nothing seemed possible, into the ideal conditions for an innovative aviation campus of the future:

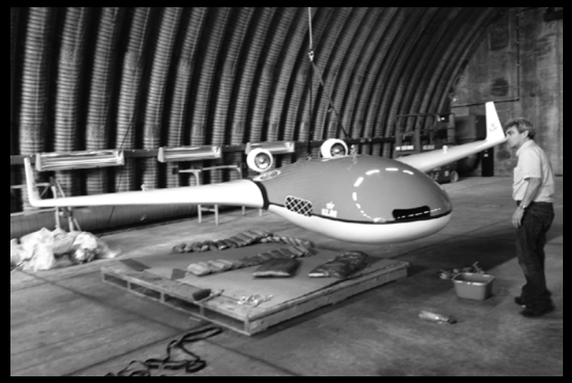
No noise, no emission, just fly.

The architectural language of the object revives the mysterious atmosphere of the Cold War. The architectural installation functions as a temporary workstation and connects old strike fighter shelters with the runway.

Location Shelter 610

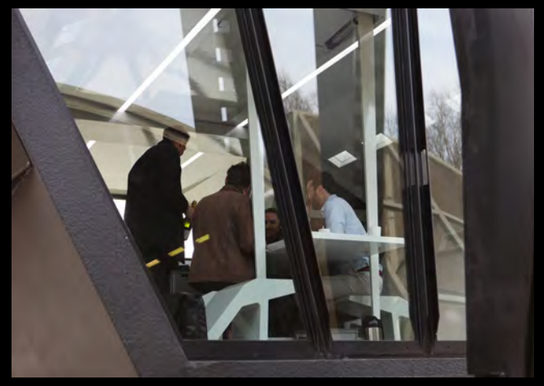


Due to the mobility of the object every spot on the airbase transforms in a possible working place. The amazing view on the airbase was the starting point for designing the hand made interior. The interior has been designed to be adjustable and mobile, so people can work in different ways — the seats have a passive and active position (by flipping them 90°). The table can be pulled down from the ceiling when needed. The (hidden) seats in front of the large window in the cockpit create the ideal observation post, but they also serve as places to withdraw to, either alone or with others.

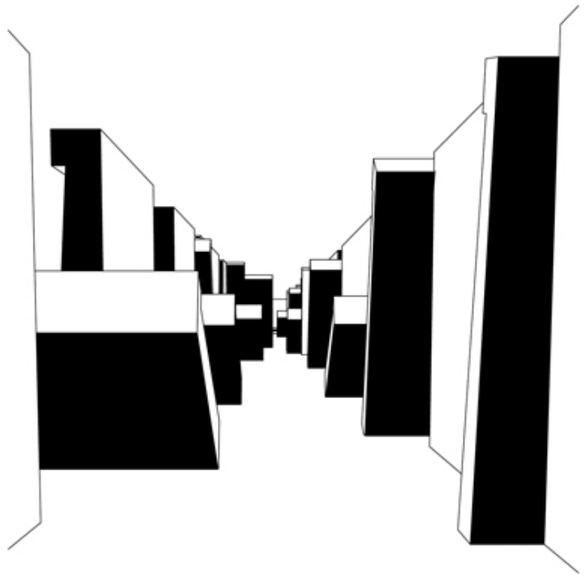


The unconventional combination of nature and Cold War history offers an exciting environment for the development of knowledge of nature, technology and aviation. In 2014 there were many experiments, for example with prototypes of the flying car (PAL-V).

Based on our assignment to design the interior for one shelter (our client just asked for a piece of furniture for an undefined target group). ultimately we designed something that can, in the long run, colonize the whole airbase: a Trojan Horse. Our primary focus was what the airbase could ideally be. Futhermore, the research we carried out with Delft University of Technology's Faculty of Aerospace Engineering showed that the political climate of the Netherlands, in relation to its European neighbours, is the ideal place for an innovative campus for the aviation sector.



The flying car PAL-V (Personal Air Vehicle) ready to take off.



After the great Dutch flood of 1953, a series of enormous waterworks were built to guarantee an 'indestructible delta' preventing catastrophic coastal storm floods. The Deltaflume, a giant wave basin, served as a test site for the famous Delta Works. This national monument for the eternal struggle against water embodies the spirit of all 40 water-test models in the Waterloopbos (1977-2014).

Deltawerk // by RAAAF | Atelier de Lyon (designed 2014-2018, realized 2018-2023) questions the ambition to build an "Indestructible Holland" in times of climate change and rising sea levels. Deltawerk // is also an experiment in creating new ruins. By excavating this structure seven meters deep, this "Delta Work on scale" now stands in water itself. In the absence of waves, the devastating power of water is made palpable by cutting large plates out of the concrete walls, turning and tilting them. The 250-meter-long seemingly indestructible structure has now become vulnerable itself. The mega structure opens itself towards the Waterloopbos and serves as the entrance to a kind of "Alice in Wonderland-trip" through the forest along 40 smaller water-model ruins.

By setting up conditions for ecological responsiveness, Deltawerk // will transform. 5,000 m^2 of concrete has been sandblasted, creating a canvas for other life forms. Over time, it will be colonized by nature, such as mosses, ferns, insects, etc.

Similar to our cut through UNESCO-monument Bunker 599, Deltawerk // opens up a new perspective for the practices of cultural heritage and (landscape) architecture, namely Hardcore Heritage: Imagination for Preservation.

Link to (private) making of video:
vimeo.com/323186990

Password:
welcomedeltawerk//

In full collaboration with Atelier de Lyon.

> Photo: Jan Kempenaers

Deltawerk //

Waterloopbos

RAAAF | Atelier de Lyon

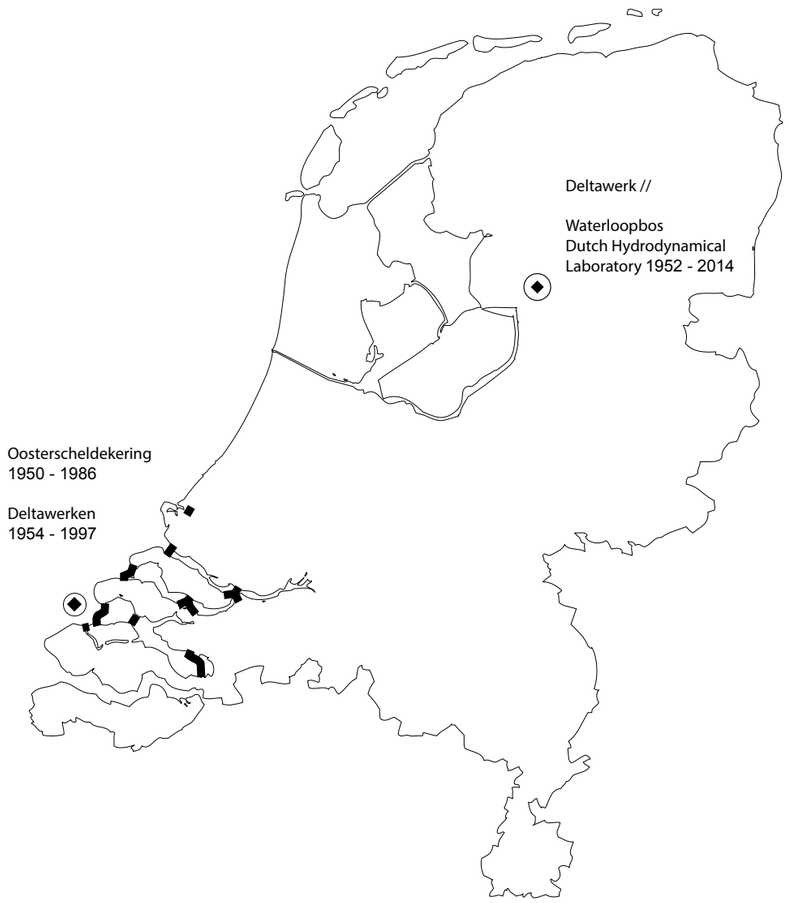
Waterloopbos - Landscape laboratory 1952 -2014

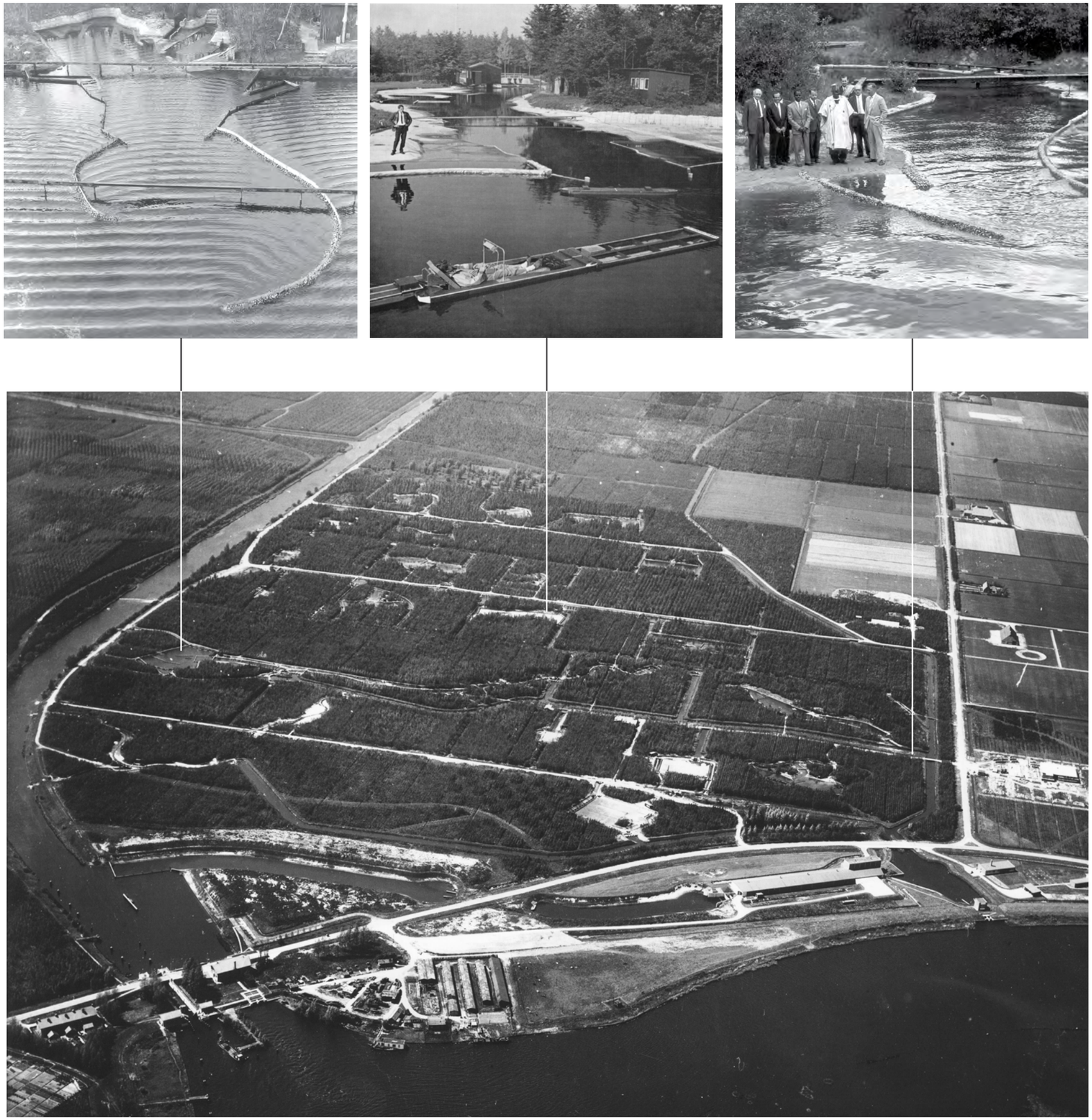
After the big North Sea flood of 1953 in the Dutch delta a series of enormous engineering works would guarantee an indestructible Delta preventing a catastrophic coastal storm flood that appears just once in 10,000 years. It led to what some have since called the 8th Wonder of the World: the Delta Works.

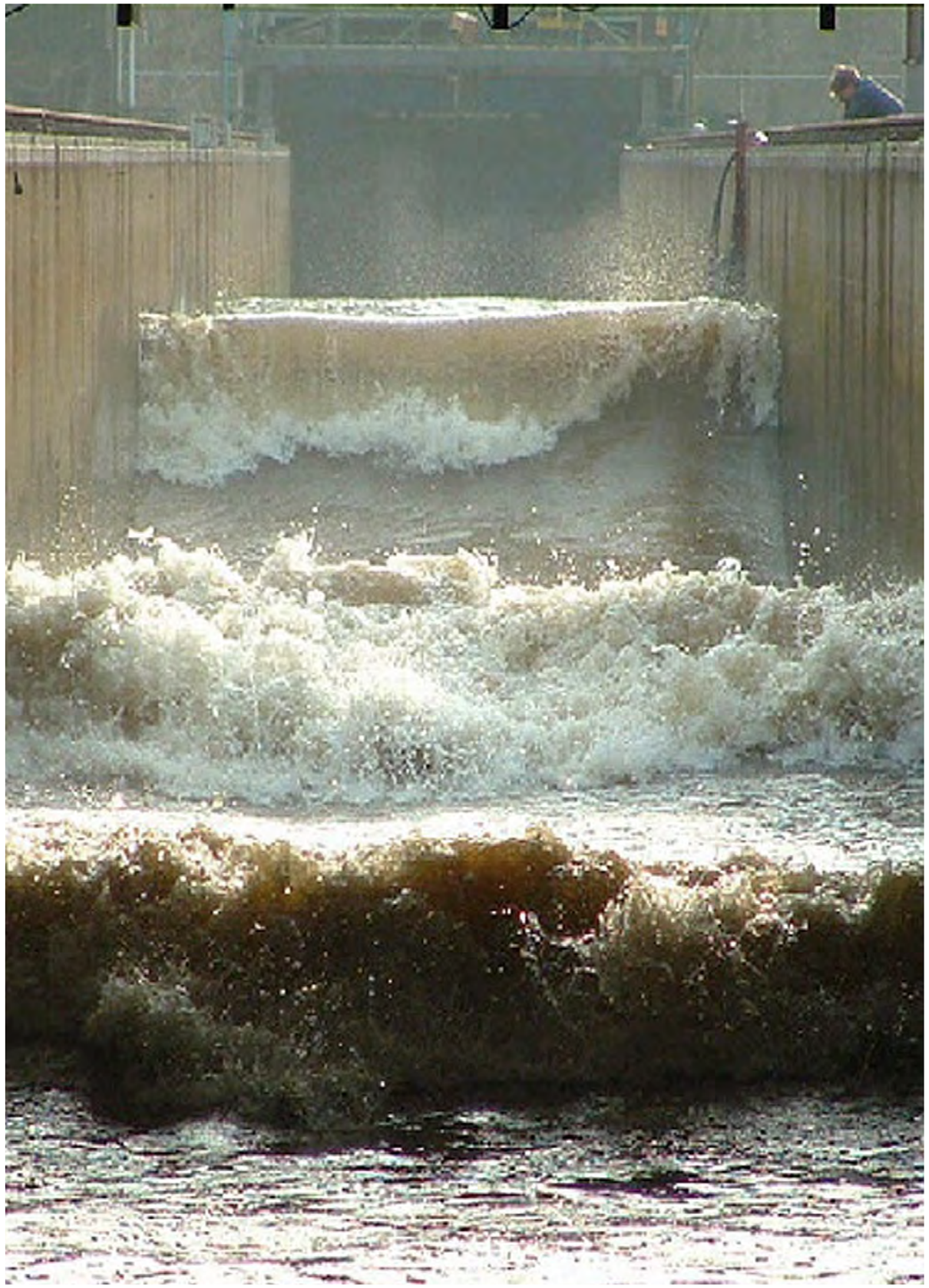
Now 40 years later after completion of the 'Oosterschelde- kering' (1986) climate change and sea level rising have shed new light on the idea of building an "Indestructible Holland".

Throughout its entire building process, the construction of the Delta works was supported by scientific experimentation at the other side of the country: an open-air hydrodynamic laboratory, built in 1951 in a newly created forest through which water naturally flowed, named the Waterloopbos.

It was essentially a laboratory as big as an entire landscape, in which the Delta works could be tested on scale. It was primarily used for the Delta works, but later on it also allowed many other international water works to be tested in the form of scale models. Computer models did not exist yet, everything had to be built manually, often by hand at various scales.



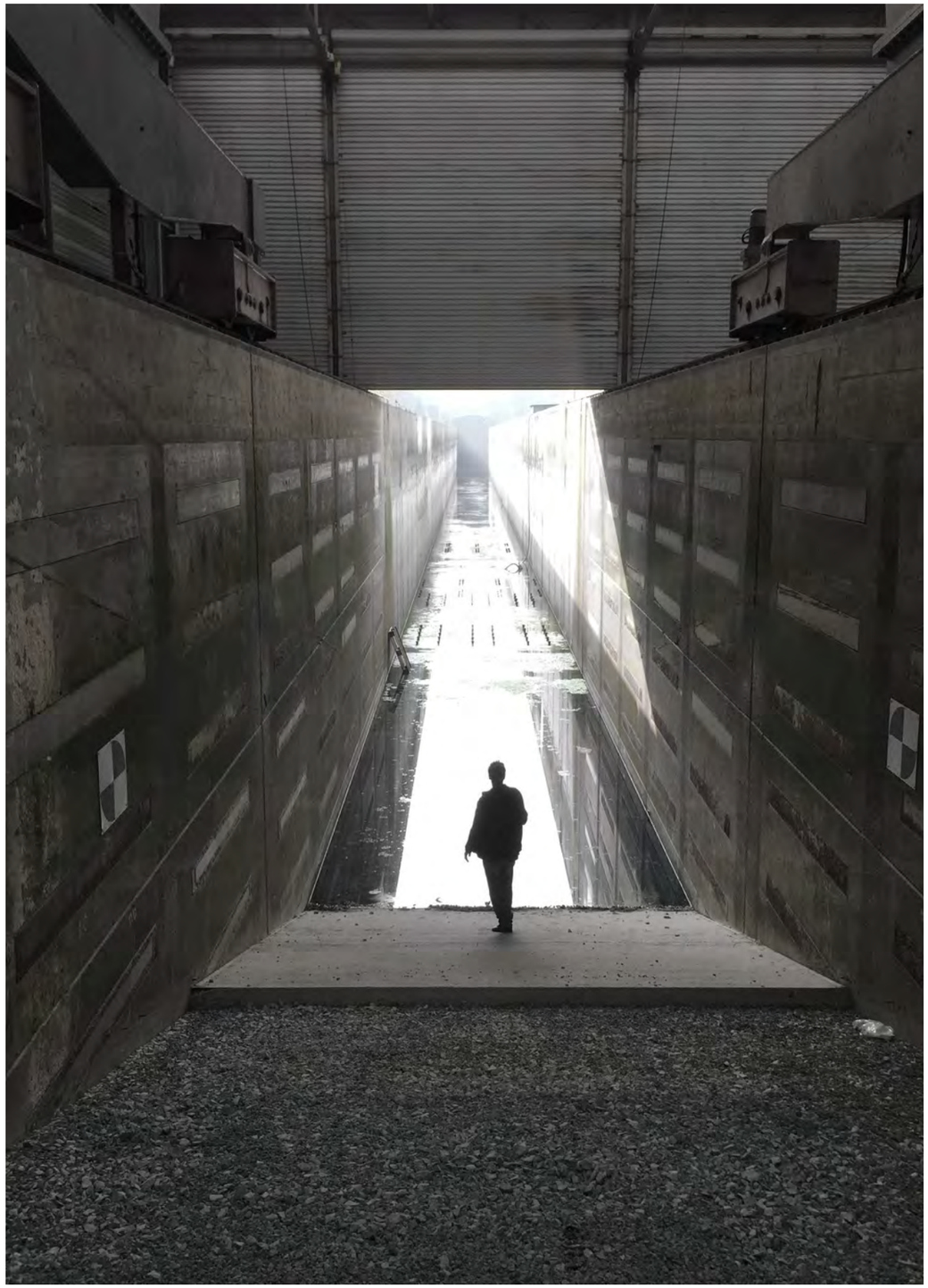




1977 - 2014

Deltaflume 1977-2015
Testing (In)destructeble Holland,
Storm in 250 m long Deltaflume, scale 1:1

Because of the new type of open flood barriers of the Oosterscheldekering that were about to be realised, it became necessary to build and test the new constructions by means of giant waves at scale 1:1. In order to achieve this, a new concrete construction was erected in the Waterloopbos. This so-called Delta flume was the first of its kind and became a masterpiece of Delta experimentation.



2017

Absence of the waves in 2017
Deltabassin remains vacant after the last experiment

The Deltaflume was a Delta work in itself, and a crucial step in the process of the realization of the Delta works. The simulated life-sized waves had to test the reliability of the constructions and prove that they were virtually indestructable. This eventually led to the realization of the Oosterschelde flood barrier that was opened in 1986. In 2014 the Deltaflume was left abandoned.

2018

Deltawerk //

Deltawerk // questions the ambition to build an “Indestructible Holland” in times of climate change.

Related to this, the artwork is also an experiment in making new ruins. In a radical way this intervention sheds new light on the practice of preserving cultural heritage: Hardcore Heritage. Read more in ‘Frontiers in Psychology’: https://bit.ly/2Skpo6Y

The intervention has litteraly opened the road towards the Waterloopbos.

Link to Making of Deltawerk// video: https://vimeo.com/323186990

Poetry of Abcense is in the details

In line with our "Poetry of Abcense" and approach of substraction the cutting-, sandblasting details and the (new) concrete bridges are as straight forward and as minimalistic as possible. For example we managed to avoid adding bridge railings. This way of working draws attention to hidden aspects like the massive amount of reinforced steel. The impressive and deep "scientific reseach tunnel" is revealed by cutting it open.

Straight forward details

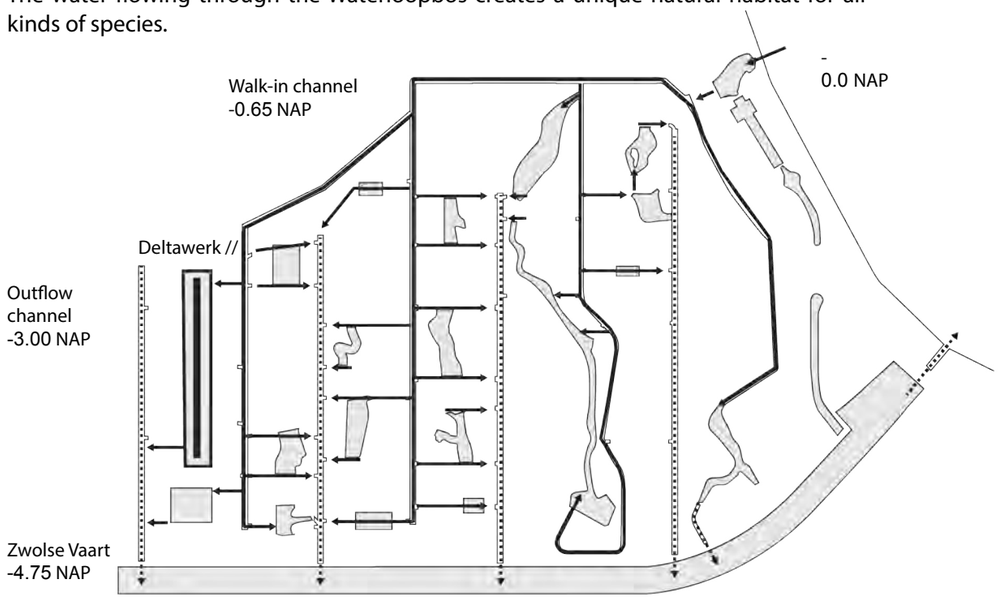
The water level is optimized to make the concrete slabs as part overall structure look like a sunken ruin.

Connecting the water system

We connected Deltawerk // in 2018 to the unique water system in the Waterloopbos; which once was the reason why the Dutch Hydrodynamical Laboratory was founded here.

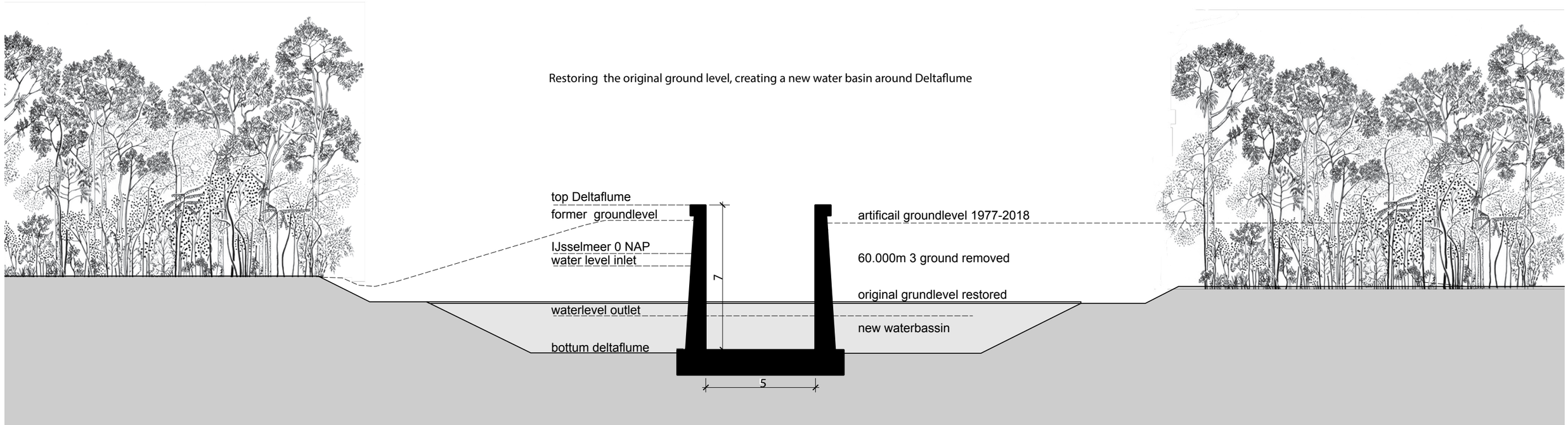
Without useless energy consumption the water is let in from the IJselmeer and falls over five metre through a series of channels and is let into the Zwolsevaart. Here it is pumped out just like all the other water of the Noordoostpolder into the IJselmeer again.

The water flowing through the Waterloopbos creates a unique natural habitat for all kinds of species.



Connecting Deltawerk // to the existing water system of the forest

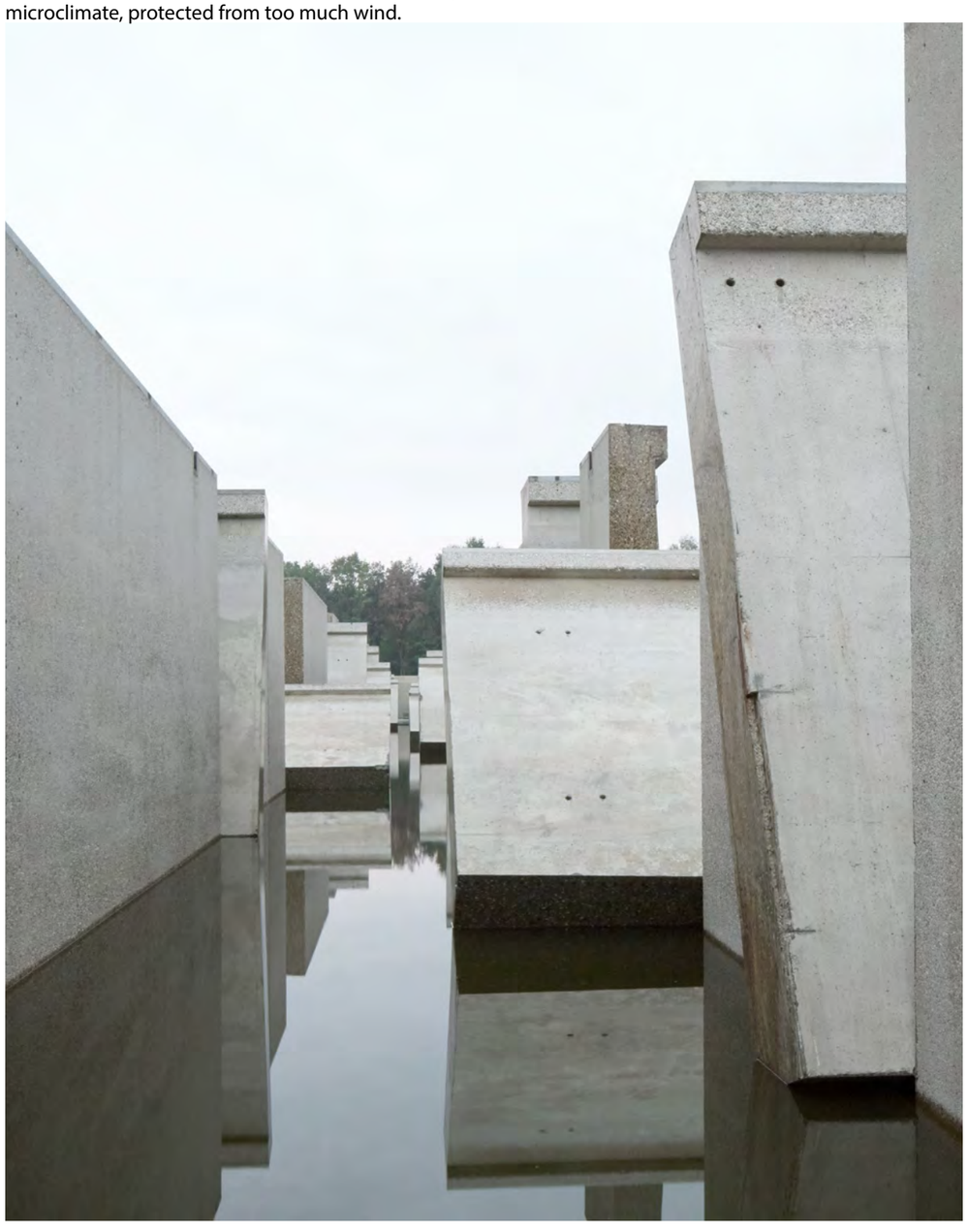
The water flowing through the Waterloopbos creates a unique natural habitat for all kinds of species.



Ecological responsiveness

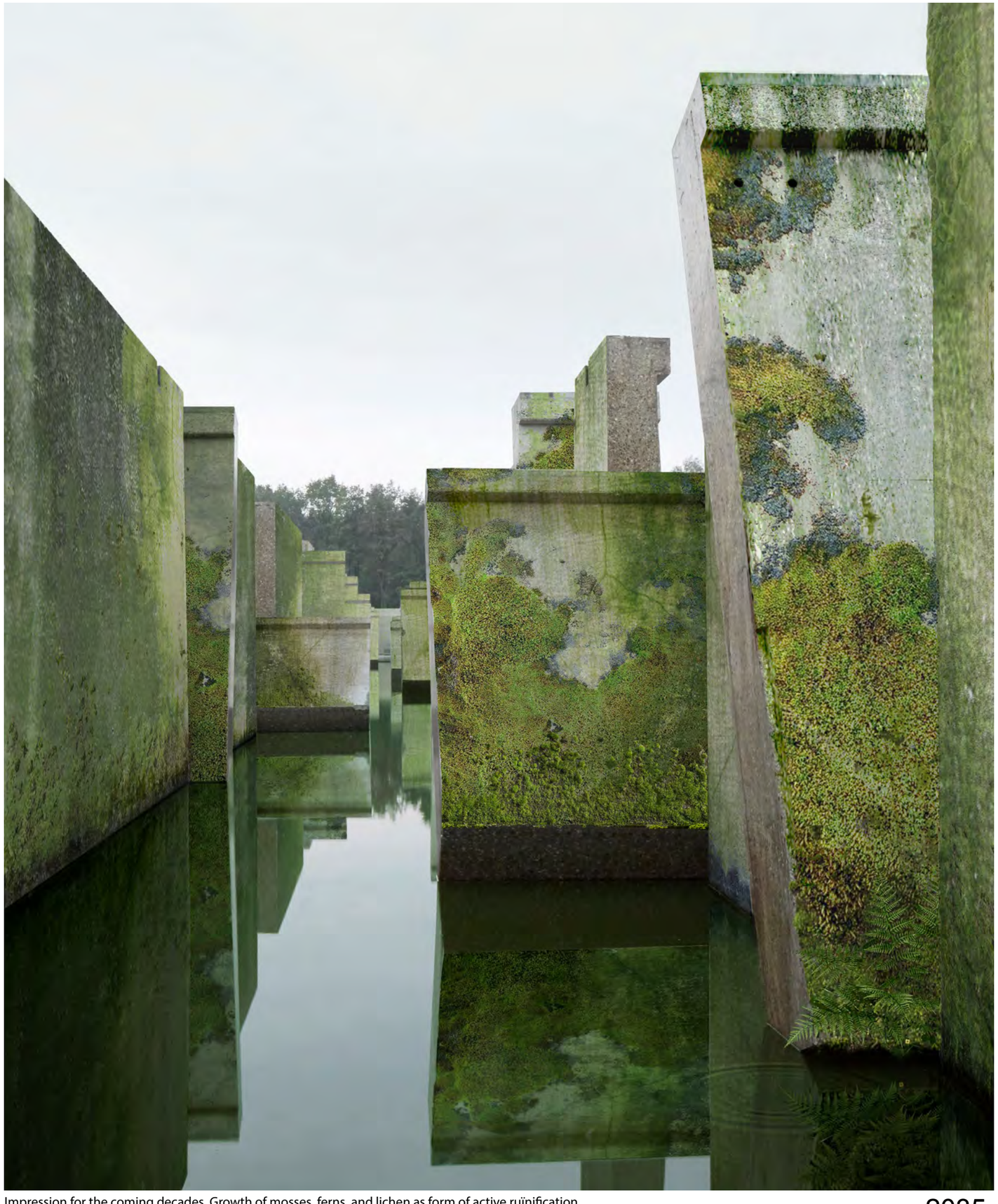
Time is part of the spatial experience and ecological transformation Deltawerk //.
5000 m2 of concrete surface has been sandblasted to change the texture of the skin so that it becomes an ecological canvas over time. In the coming decades it will be colonized by mosses, lichen, ferns and other forms of life.

In 2023, the work was surrounded by a massive body of soil and new trees in order to enhance the humid microclimate, protected from too much wind.



Deltawerk // Concrete has been sand blasted to open op the toplayer as a habitat for mosses, lichen and ferns

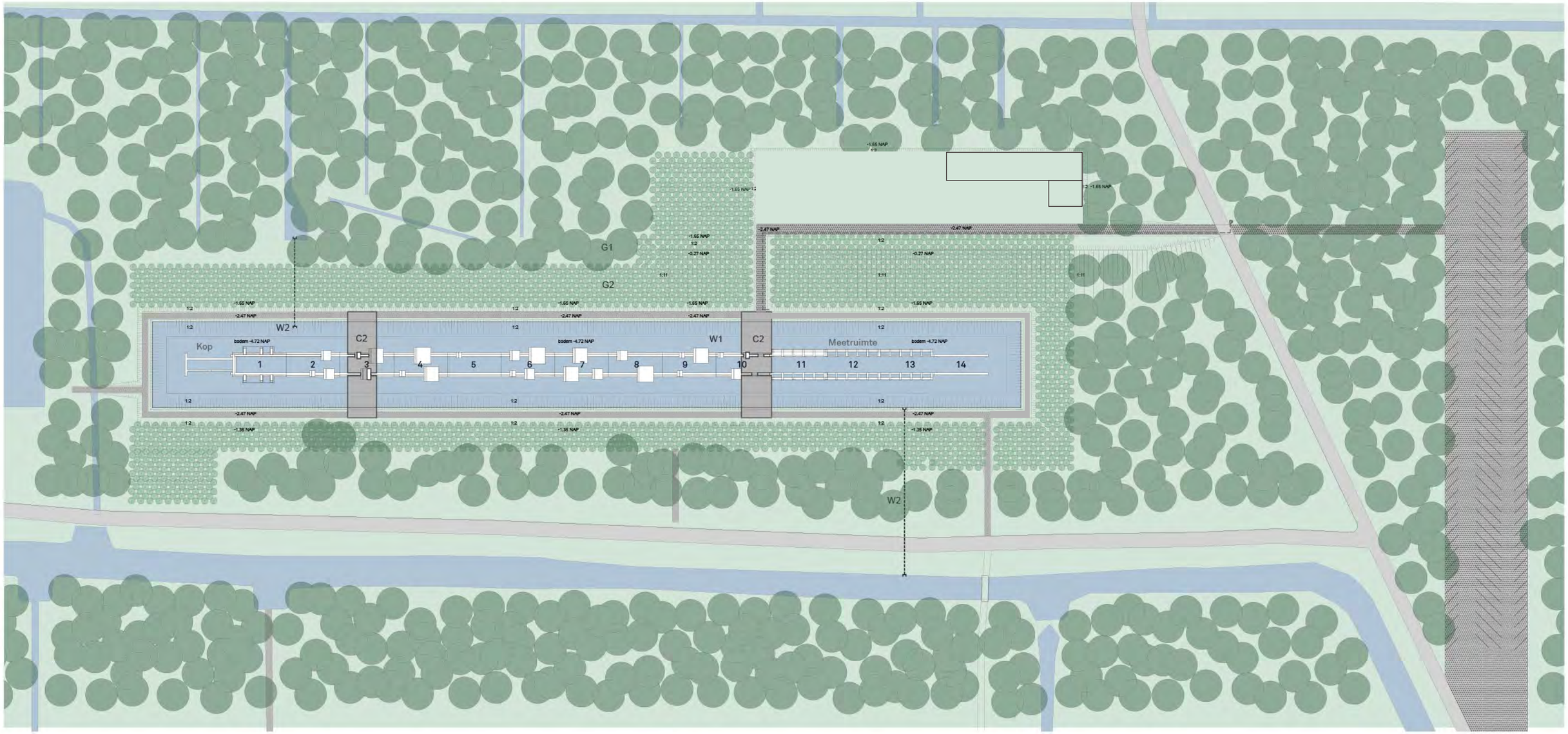
2019



Impression for the coming decades. Growth of mosses, ferns and lichen as form of active ruïnification.

2035

2023 Mosses, ferns and lichen start to grow at the sandblasted concrete skin



Plan Deltawerk //

RAAAF | Atelier de Lyon

plankaart deltagoot
schaal 1:1000 A3

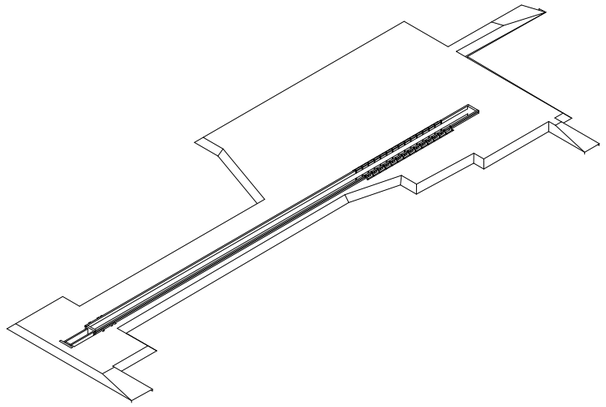
N

code	materiaal	specificatie
Verharding		
V1	Puinpad	gewalst puin
C2	Gestort en g estaald beton	in-situ gestort 115mm
V3	Asfalt bestaand	bestaand
W1	Water	+/- 1.90m diep taluds 1:2
W2	nieuwe waterdoorvoer buis	diameter >30cm
E1	grondkabel laagspanning	
G1	Bestaande bomen indicatief	
G2	Nieuwe bomen indicatief	Beuken aanplant 2m h.o.h.
C1	Deltagoot	

A Landscape of Moods

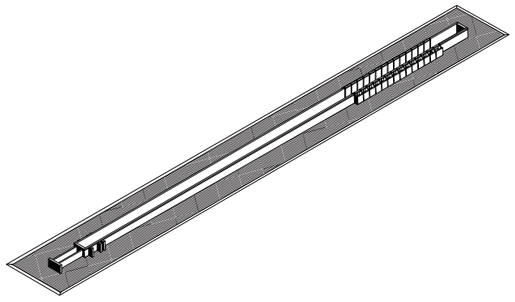
As the largest open space and flat watersurface in 1.000 ha forest, light and weather become prominent. The reflecting water mirror and pure concrete structure of Deltawerk // reinforce the moods of seasonal nature, weather and sky.

Realization phases of Deltawerk //

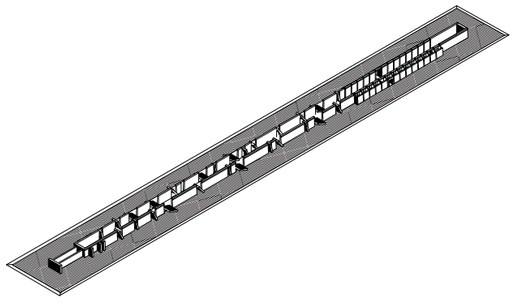


1977- 2014
Previous concrete delta flume (250 x5 x7 meter) hidden in sand plateau

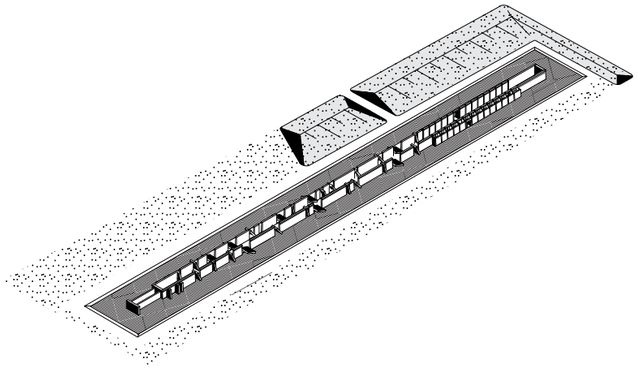
Reusing sand as an oppertunity to finance such an ambitious project in a relatively remote location in the landscape.
60.000 m3 sand is used to make new islands/ nature reserve in the close by Markermeer.



2018
Start realisation Deltawork // by excavating delta flume
60.000 m3 of sand transported and reused



Cutting and sandblasting concrete slabs and making bridges - surrounded by a water mirror

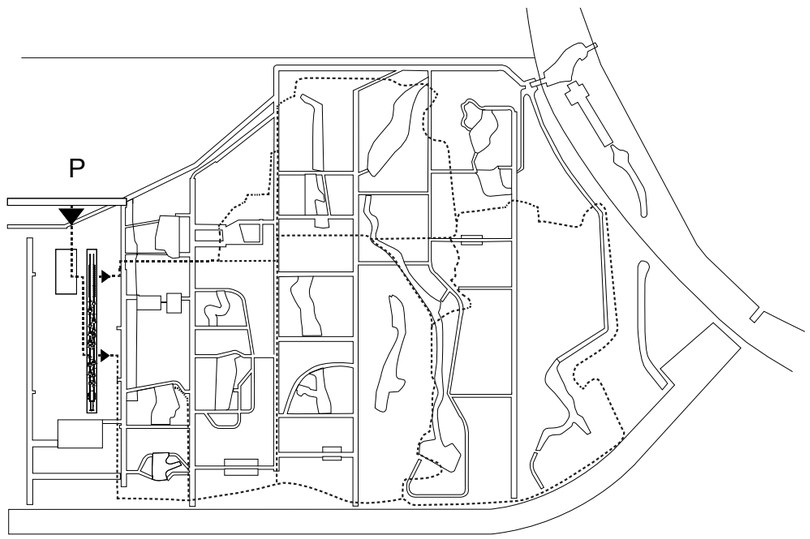


2023
Realizing enclosed space in forest and creating ecological microclimate by adding a body of soil and planting many trees

Deltawerk // - new entrance of national monument Waterloopbos

The unique combination of nature values with ruins of the watermodels is used to make a new public attraction in the remote region of the Flevopolder. The architectural intervention litteraly opened the forest for the public.

Since September 2018 thousands of visitors came to epxerience the secrets of The Waterloopbos. The engineers that used to work in the labatory are now guiding tours through the forest.



New Entrance to National Monument Waterloopbos

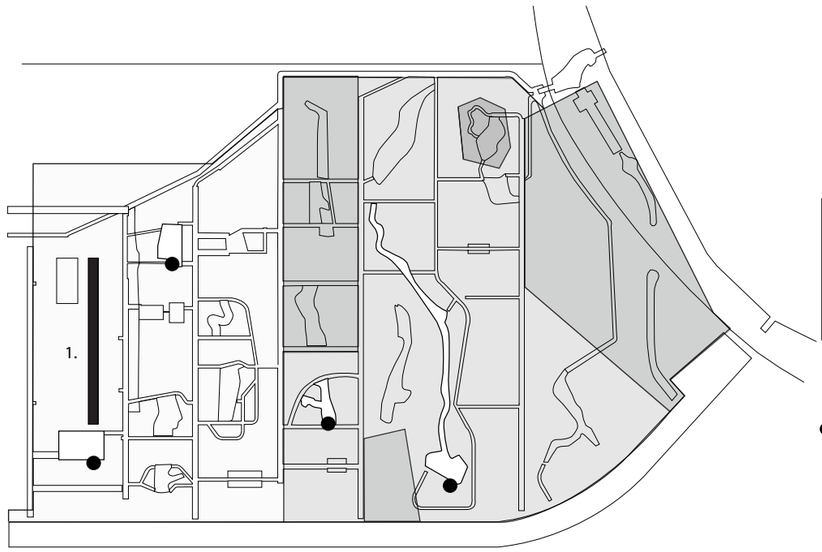
Improving the routing for public accessibility by creating strategic architectural intervention. Deltawerk // has litteraly opened towards the forest.
Recreational paths structure (incl. wheelchairs) along zones of natural value.

Cultural history meets nature

During the period of the laboratory, watermodels were used often for a couple of years and then left abondoned. After a while and they were adapted towards new hydrodynamical experiments. Constant change lays within the spirit of this place.

Nature took over the laboratory since 1995 (exept the Deltaflume, closed in 2016).

Nature now becomes a future strategy for dealing with cultural history of a place.
This inspired us to turn Deltawerk // into an “active ruin” that invites nature.



Strategy Waterloopbos & Deltawerk // :

1. Transforming the Deltaflume (largest scale model) into Deltawerk //
   It combines the three sides of the Genius Loci A, B & C

   A. period between 1960 - 1995)
   The Era of (In)destructible Holland.

   B. period between 1995 -2015
   The water models became ruins.

   C. Nature has taking over control and became part of the new identity of the forest.

   The new intervention questions A, B & C in relation to contemporary phenomena such as climat change and sealevel rising.

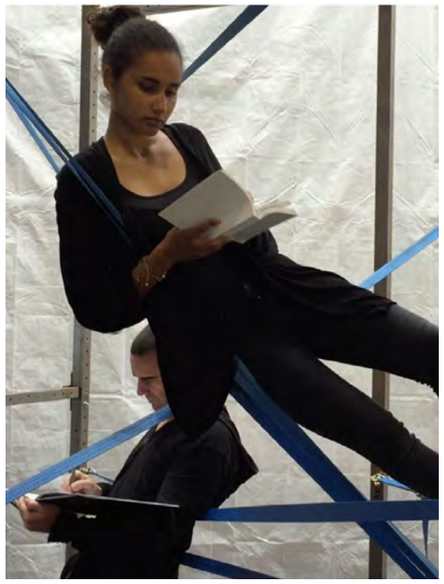
2. Restauration of the four most essential Water Models from 31 natural ruins in the forest of The Waterloopbos.

3. The other watermodels become ruins in nature

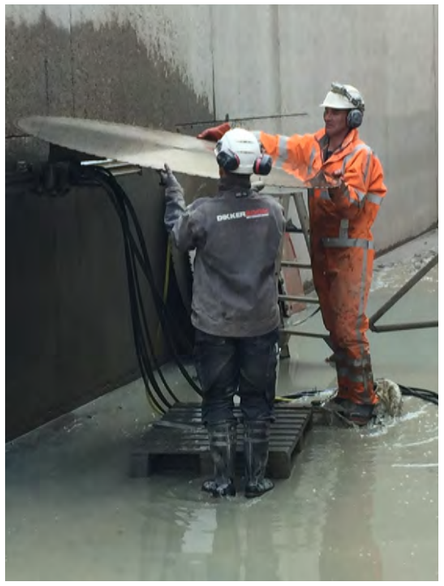
A wide range of visitors at Deltawerk //

The openness of Deltawerk// invites people to explore the work and themselves in different ways, depending on weather, seasons and their interests.

The Deltawerk // project team

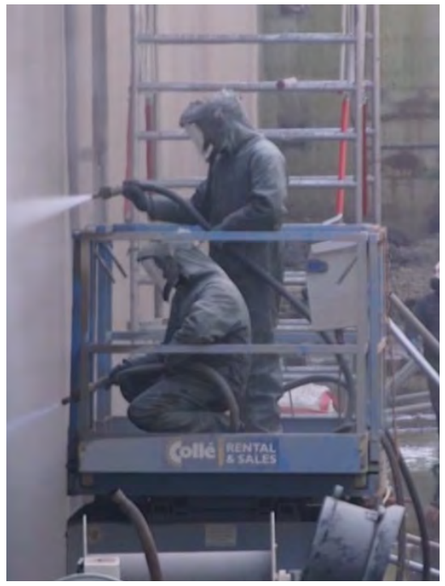


Cécile-Diama Samb, Senegalese/Swiss
architect assistant RAAAF



Chris Veldhuizen - Dikkerboom, Dutch
concrete cuttings

Mariana Fernandez - Mexican
Johnny Long, Vietnamese
architect assistant RAAAF



Hompert - Rennes, Dutch
sandblasting

Albert Aptroot, Dutch
moss- and lichen specialist

Daria Khozhai, Ukrainian
architect assistant RAAAF

Arna Mackic, Bosnian/ Dutch
architect assistant RAAAF

Ronald Rietveld (l), landscape architect
Erik Rietveld (r), philosopher
(co-founders RAAAF, Dutch)

David Habets, Dutch landscape architect

Erick de Lyon, visual artist (r)
(founder Atelier de Lyon, Dutch)

Collaborative Practices and Inclusive Team Dynamics