



Above :: Waterhole residence 'aerial aquatic view'

# waiter, there's a hole in my water!

RONDAY WINKELAAR ARCHITECTS OF AMSTERDAM RETHINK THE WAY PEOPLE LIVE ON AND IN THE WATER

Words :: Natasha Evdokimoff // Images :: ronaldwinkelaararchitects

IT'S WELL KNOWN THAT THE DUTCH ARE EXPERTS at keeping water at bay. With almost half of the country lying below sea level, much of the Netherlands would be snorkeling to work and awash under the fathoms if not for an ingenious system of dikes and levees.

What's not so well known, so far at least, is that the Dutch have begun to change the way they think about water. Little by little, they are relinquishing their ongoing battle to hold it back. Instead, they are learning to live in harmony with the water, giving it the space it needs so that when climate change does occur, they'll be ready to live in a symbiotic relationship with the H<sub>2</sub>O.

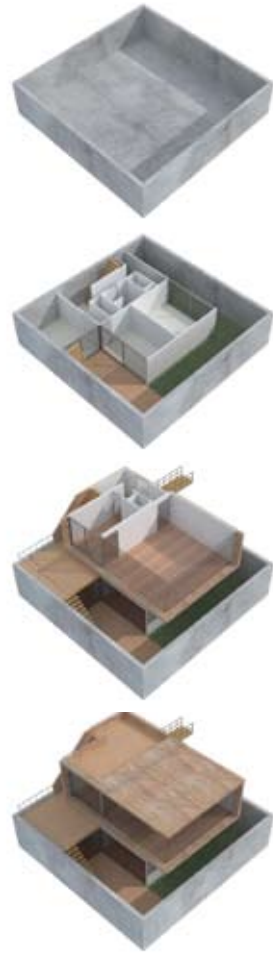
Enter water tamers, Bob Rondag and Maxim Winkelaar. This Amsterdam duo decided to rise to a challenge posed by the Dutch Union of Architects and the Bosch Architecture Initiative: design a floating home for a lake community near the southern town of Den Bosch. The requirements; it must be spacious, durable, and allow water to flow freely around and underneath it. None too small a task. Yet, out of 60 entrants, the team from ronaldwinkelaararchitects took first prize in the competition for a submission they call *Watergaten.nl* – a floating box-in-box concept that makes living in water a literal possibility. Or 'Waterhole' as the English would say.

In its most simple terms, Watergaten's design is grounded in the same basic principle that has kept the Netherlands dry for centuries: forcing water out of the way with concrete walls. Rondag and Winkelaar designed a floating, watertight

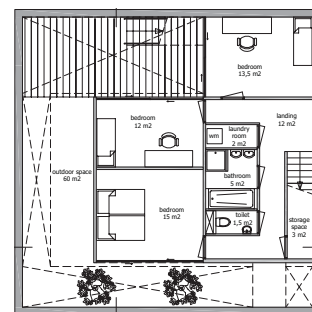
concrete box measuring 12 metres wide by 1.5 metres deep (to grass level). When moored in place, each box effectively becomes an individual floating oasis – a "hole" in the water providing enough space to construct a two-storey dwelling complete with attached terraces and a surrounding grass-covered yard. The design concept and all its intricate engineering details are presented in a document aptly entitled *Waterholes – The Netherlands in Miniature*.

"Houseboats are very common in the Netherlands, but they're typically narrow and built on top of a rectangular floating structure rather than inside of it," says Rondag. "The square box we designed is much bigger and offers many advantages, including both indoor and outdoor living spaces below water level. It's really a scale model of Holland, where we live partially under the water level all the time."

The idea of a concrete box in water poses an obvious question: How do you make it float? The key is balanced water displacement. Rondag and Winkelaar had to make the box big enough that the surface measurement would displace just enough water to provide an equal amount of upward force. If you want to do the math, the Watergaten calculation works like this: 144m<sup>2</sup> »



Above :: Green space provides private, enclosed environment with raised floating floor to reduce standing water and bilge pump integration.



Above :: Plans and elevations  
Three terraces have been created – one in the box [bedroom level], one on the first floor [living room level] and one on the roof. The terraces supply a link between the living and floating concepts.

of concrete displaces 201.6m<sup>3</sup> of water = 201.6 tons of upward thrust. If you're interested. Another small detail, the thing can't leak either.

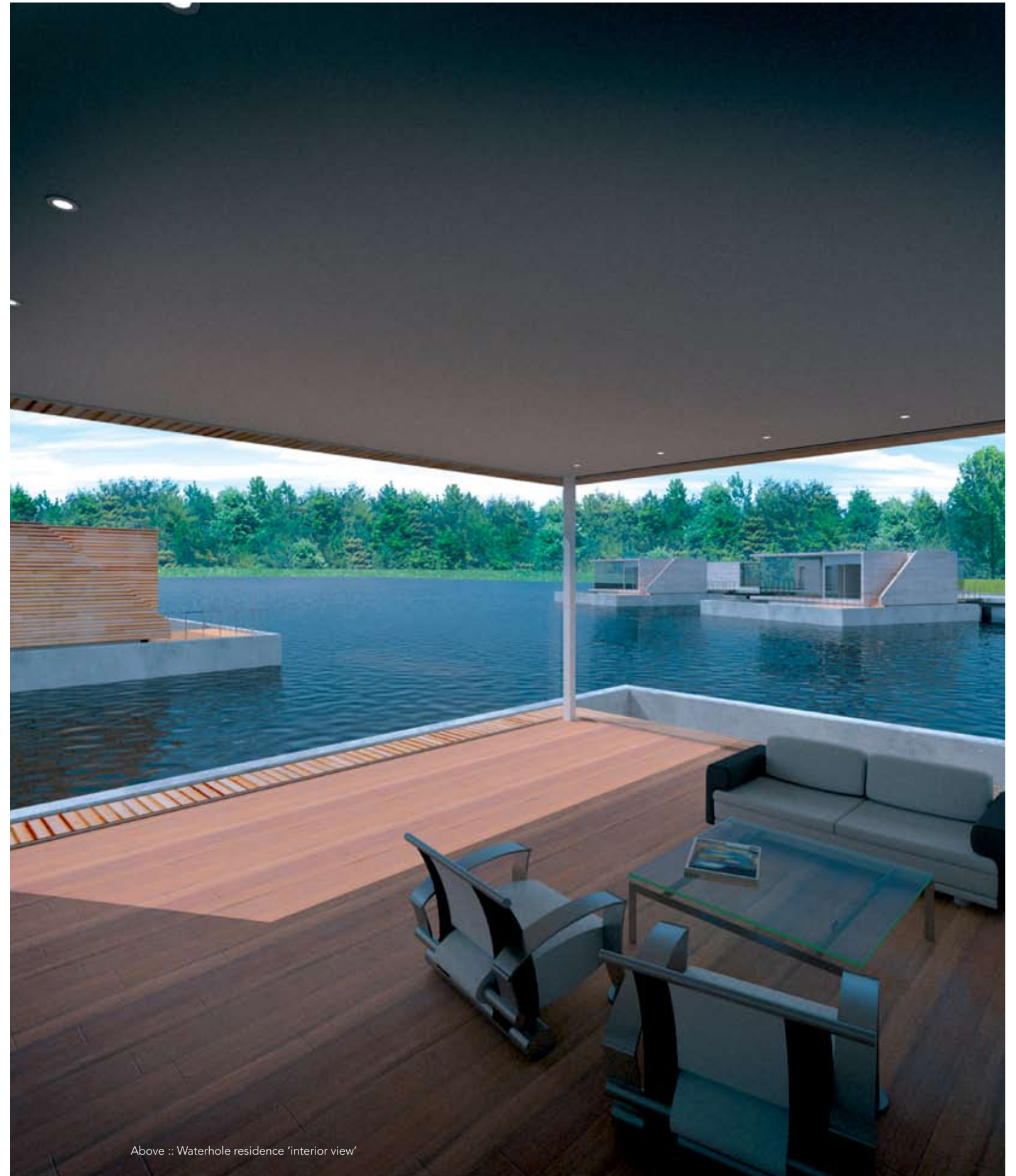
"A reinforced concrete box with walls 200 millimetres thick is guaranteed watertight for over 20 years," explains Winkelaar.

Once the flotation system was devised, Ronday and Winkelaar could turn their attention to what went into the box. Compulsory requirements for the home were lean, but the duo instinctively understood that the design should be modern and minimalist, incorporating a variety of lightweight materials with high durability. They came up with a living concept that provides privacy as well as a good view, incorporates both indoor and outdoor living spaces, and provides would-be residents with plenty of light and space.

"We see two visual options for the homes," says Ronday. "The first is to keep all the houses identical to create a powerful image with repetition. The second is to keep the boxes the same, but have a variety of different home styles at the same height at size."

Materials chosen for the home include wood, aluminum and glass. Wood serves as the skeletal frame and is used for front-ages, roofing and on each of the home's three terraces – one on the roof to highlight views of the water, another on the main level bordering the kitchen and living room for indoor/outdoor living purposes, and the final terrace at the base of the box which is completely private and kept out of the wind.

Aluminum covers the lower level of the home, providing a lightweight and sturdy exterior that reflects light, lending brightness to the surrounding garden even though it's completely enshrouded by cement. A large amount of high-yield glass maximizes light for the home's interior while maintaining optimum insulation. Ronday and Winkelaar incorporated a roof overhang around the home to use passive sun energy for temperature regulation. In the summer the overhang shields the house from direct sunlight, but in the winter, when the sun is lower in the sky, sunlight is directed into the home to boost heating.



Above :: Waterhole residence "interior view"



wine bar

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The main level of the home is very open and exposed to the outdoors courtesy of the large panels of glass. The kitchen and living room comprise the majority of the space, but there is also a front foyer, cloakroom and half-bath. Three bedrooms have been incorporated on the lower level, 1.5 metres below the water's surface. The floating box provides absolute privacy for these rooms, in addition to creating a safe environment for children to move freely in and out of the home to play in the yard outside. A laundry room, storage space, bathroom with a standup shower, tub and two sinks plus a separate toilet room and basin are also part of the lower level floor plan.

The total plan for *Watergaten.nl* provides 110 square metres of exterior living space and 115 square metres of interior living space. Converted to more standard North American measurements, that's 1,184 square feet and 1,238 square feet respectively – enough area to accommodate a family of four comfortably.

"Living near water has always been very popular and is becoming more so with all the publicity about climate change," Winkelaar says. "Three levels make this home very livable. It has privacy, a connection to the water and great views – all the best aspects of the location."

Logistically, the biggest challenge Ronday and Winkelaar faced was figuring out where and how construction of the box could take place. Too wide to be transported through the country's narrow water locks, it had to be built at the site. Ronday and Winkelaar proposed three options: build the structures on the quayside of the lake and pull them to their mooring place upon completion; build the structures on the lakebed when it's partially dry and float them into place as the water rises; build the structures on

stilt supports where they would be moored. Other planning hurdles that land-loving architects might consider daunting – such as power and plumbing connections – are par for the course for Dutch designers.

"Sewage, plumbing and power are handled the same way they would be in normal house," says Ronday. "The only difference is the use of flexible connections between the house and the pier. Each house has a pump to get rid of waste water and one to keep the box free from a buildup of rainwater."

The community *Watergaten.nl* was designed for is known as De Groote Wielen, a development area in six phases surrounding a man-made lake filled with diverted rain and river water. One of the six phases is a 4,300-unit housing estate called Watertuinen, or Water Gardens, part of which will include four piers that stretch out from the shoreline. It's here, on 40 "water lots," that Ronday and Winkelaar's waterholes would hypothetically be moored. Unfortunately, the competition was more about garnering ideas for living on water than putting them into actual practice. Despite being the first-place winner, *Watergaten.nl* remains on the drawing board. "Councils are conservative," says Winkelaar. "Watergaten is considered risky because something like this has never been seen or done before."

Ronday and Winkelaar are currently in talks with a number of municipalities, in Holland and abroad, about developing the project. Chances are good though, that *Watergaten.nl* will have its first incarnation in its homeland, as the Dutch government implements new policies for increased controlled flooding across the country. Gives a hole new meaning to the term living on the water. ☑

[www.watergaten.nl](http://www.watergaten.nl)

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