

Conceptual design drives sustainability consciousness

● A conceptual design for a building in the Namibian desert able to source its water from fog has been resurrected as a focus to stimulate the thinking of designers about the opportunities for sustainable design elsewhere. **KEITH HAYWARD** reports.

Sustainable design is about doing things differently, and achieving sustainable designs means getting designers to think differently. This is exactly the sentiment that has prompted Matthew Parkes, Director of Architecture with international architectural and engineering design outsourcing company Atlas, to revisit a conceptual design he first devised just over a decade ago. Drawn up as an innovative approach for sourcing water in the Namibian desert, Parkes has recently introduced it to the company's team in Vietnam to stimulate their thinking about how to develop sustainable solutions.

Parkes originally came up with his concept, which he dubbed the Fogcatcher, in 2000 as a desk-based project whilst studying development issues, building on the inspiration of a holiday trip to the Namibian desert.

The source of this inspiration was the Namib Desert Beetle. The Namibian coast sees fog roll inland some 200km daily for most months of the year. Parkes learned that the beetle goes to the top of sand dunes every morning, and that its body structure allows it to harvest the water it needs from the fog. 'If he can do that, why can't we do that with buildings?' Parkes recalls asking himself.

Starting with the idea of the beetle, Parkes developed what he describes as an 'edutainment' concept – a building that was both educational and entertaining – built around the use of netting as a means of collecting fog to provide a water source. The building incorporated an array of netting 'sails', designed on a rib-like basis to allow expansion as the site grew, and coupled these with a 'fleshy body' of four teaching pods and an auditorium.

Fog-catching has been used in

particular in Chile, so there was a body of knowledge upon which Parkes could draw. He explains that his design provided a 720m² sail area. Research in Chile of passive collection of fog using Raschel nylon netting showed expected yields of 3 litres/m² of netting, so a total capacity of 2160 litres in what is otherwise an extremely arid area. A more expensive option, active collection using a charged double wire mesh, could be expected to yield around 12,000 litres a day, based upon research data available at the time.

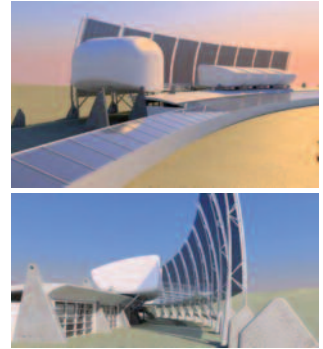
As well as incorporating other sustainable aspects, Parkes considered the siting of the building, suggesting it could be on the coast close to Walvis Bay, and so be both served by a main road and close to the Swakopmund tourist area that would be a source of visitors.

Parkes explains that he did have exchanges with Namibia's Desert Research Group and forwarded his completed research, but being a desk-based project it was never pursued. But now the work is having a new lease of life as a focus for training in the use of design tools and for stimulating the thinking of designers regarding sustainable options.

Parkes decided to resurrect the concept in the first half of last year, and in fact gave a presentation on it at the user networking event of software company Bentley Systems in October. He explains: 'Initially it was to get the team to start thinking about complex shape modelling using Bentley products, but also about building awareness amongst them about environmental issues, bearing in mind Vietnam faces a lot of environmental issues and... there is a lack of awareness in certain areas.'

'I am really trying to build capacity amongst the architects and the

Renderings of the 'Fogcatcher' conceptual design for the Namibian Desert, showing the sails that could be used to collect fog.



engineers in the office to start thinking, hang on, this was a solution to the Namibian desert, those were the issues in Namibia, that is a possible solution, [so] what are the issues here in Vietnam – and it is on a far greater scale – and what are the solutions.'

A new model has been built using MicroStation, and Parkes explains that it has been used to look at improvements to the original design, at what technology has become available since, as well as at the wider range of issues that need to be considered: 'Now it is not only water – it's energy, it's how do you alleviate flood risk, what about food harvesting; there is a whole host of environmental issues that I am trying to push the team to think about.'

And the intention is that this will all feed into the services that the company provides to its clients, especially in less-developed countries that do not yet have the guidance and building regulations in place to drive sustainable design to the extent seen in developed countries.

'Using products like Bentley you can get true collaborative working where the real environmental issues – water, power, energy use – can all be put on the table earlier in the design process, and that's really what we are interested in pushing,' comments Parkes. 'We are uniquely positioned in Vietnam, where we are working in Europe, the Middle East and Australia, where we see different approaches to pretty much the same problem, the same challenges that the whole world is facing.'

His vision then is to act 'like a sort of collaborative engine... facilitators of a more holistic approach to design, which allows the real sustainability and environmental issues to be put on the table sooner in the process, because at the moment they are not.' ●