RIBA MCASLAN BURSARY 2015

ZERO-POINT HOUSE*

“WE SHAPE OUR BUILDINGS, AND AFTERWARDS OUR BUILDINGS SHAPE US”.

WINSTON CHURCHILL, HOUSE OF COMMONS,1943

Indicative map showing the effects of rising sea levels in Europe

Above: Citadel Apartment Complex, Naaldwijk, the Netherlands, Waterstudio - currently under

Above: Floating Houses, IJburg, Amstadam, Architectenbureau Marlies Rohmer

Above: Floating School, Makoko, Nigeria, NLE Architects

“The President in Washington sends word that he wishes to buy our land. But how can you buy or sell the sky? The land? The idea is strange to us. If we do not own the freshness of the air and the sparkle of the water, how can you sell them? Every part of this earth is sacred to my people… We are part of the earth and it is part of us… The earth does not belong to man, man belongs to the earth. All things are connected like the blood that unites us all. Man did not weave the web of life; he is merely a strand of it. Whatever he does to the web, he does to himself.”

-CHIEF SEATTLE’S LETTER TO THE PRESIDENT OF THE UNITED STATES, 1852

Two major crises have begun to dominate our lives: climate-change and the housing shortage. Environmental damage cannot easily be undone, but we can develop more environmentally harmonious lifestyles - sustainable approaches to the built environment that will not exacerbate the ecological crisis brought on by the growth of world capitalism. We need to provide better housing for more people, for less.

Many architects, developers, local authorities and individuals are in search of new solutions to affordable housing, require more detailed case study information on floating architecture. I propose to carry out research in the Netherlands and Nigeria to investigate two different, but equally valuable, strategies of building on the water. My intention is to create a public online resource of floating housing case studies and develop an open-source design for the world first self-sustaining, sustainably built, affordable, floating house: ‘the zero-point house’. Floating communities are an opportunity for participative urban development, in which you are not only a ‘consumer’ but a co-creator of your neighbourhood. As philosopher Andre Gorz says, we must ‘produce what we consume and consume what we produce’. This house will be designed specifically for the British climate and demographic, but the design can be adapted to suit different parts of the world; offering further possibilities to alleviate the effects of hugely disruptive annual flooding around the world, for example in cities such as New Orleans or Lagos.

PROJECT AIMS

It would be a shame if all instances of floating architecture become just another commodity; only to be enjoyed by the rich; only profited by corporate developers. The price of land makes up 40 to 50% of the total cost of the average development in the UK. Building on water would offer housebuilders a more affordable housing solution if the water ownership can be retained by local authorities and housing associations. It is essential to make key unbiased information available as soon as possible so that floating architecture can benefit my ‘clients’ - the earth and its many citizens. The ultimate aims are to influence and improve housing strategy in the UK. The specific objectives are to:

- Understand the benefits of building on the water in terms of climate-change (rising sea-levels, flooding), alleviating pressures on landmass and neighbourhood regeneration.
- Inform policy for the better and help policymakers to balance financial sustainability with the need for social and affordable housing. Provide aids to help the ownership of ‘blue-fields’* sites be retained by local councils.
- Develop detailed, objective case studies on Dutch and Nigerian approaches to floating development
- Develop an open-source design for the world’s first self-sustaining, sustainably built, affordable home: ‘the zero-point house’: a machine for living in the age of housing and environmental crises, a cross-cultural solution to housing shortages and rising sea-levels this output will facilitate subsequent funding bids to actually realise this prototype at 1:1 scale. This house will be designed specifically for the British climate and demographic, but the design can be adapted to suit different parts of the world; offering further possibilities to alleviate the effects of hugely disruptive annual flooding around the world, for example in cities such as New Orleans or Lagos.
- Test-out my own simple designs in Nigeria, e.g. the ‘floater’ - floating toilet, which uses ecological communities to clean contaminating waste toilet water caused by open human defecation into waterways
- these case studies in an online resource for the public that will facilitate floating development in the UK by providing information on key topics: self-build, public realm, place-making, construction techniques, density, sustainability, self-sustainability, adaptability, development opportunities, affordability, commercial potential, law, planning.

PROCESS

The Dutch have been living with water for more than 1000 years and have pioneered advanced climate-change ready housing. In Nigeria approaches to floating structures must be self-sustainable, buildable and affordable for local residents, who are often poor with little formal education. We can learn best practice for the UK by combining these two different approaches. In the Netherlands, advanced engineering solutions needed for building floating communities can be understood by visiting IJburg in Amsterdam, the Hague, Maas Dyke in Maasbommel, Maastricht, Rijnhaven in Rotterdam, and Utrecht. Travel and research in Nigeria will form an understanding of how to develop affordable solutions that allow for a more participative approach to the design and fabrication of a floating community; Dutch-Nigerian architect Kunlé Adeyemi’s has built a prototype for a floating school in Makoko, and at his studio - NLE Works in Lagos he is developing new designs for floating infrastructure for Makoko and other areas in Lagos. In each floating community the following actions will be carried out:

- Gathering technical building information, visiting manufacturers, attending workshops with architects / fabricators / engineers
- Hosting participatory design workshops where the residents use drawing and modelmaking exercises to visualise their ideal or existing community
- Carrying out interviews with policymakers, developers, engineers, fabricators, home-owners, home builders, architects
- Using tools such as photography, film, audio recordings, hand sketching, 3D modelling, CAD and participatory design to communicate and understand ideas on key topics.
- As a post-graduate student, without time-consuming professional work obligations, I can make stronger: preparatory travel research, developed detailed speculative designs, professional and academic networks. This significantly increases the scope of the project allowing for better research, more advanced technical (engineering) capacity, more future opportunities to take this initial start to the next level. I can also exploit opportunities and connect with Imperial College London, on campus university departments such as Vehicle Design, the Canal and River Trust and British waterways. This will allow me to acquire the technical, engineering, masterplanning and public realm resources I need to achieve the ambitions laid in this proposal.
- With mentorship from McAslan and Partners, develop working relationships with UK technical expertise - hydraulics specialists HR Wallinger (grand Design Amphibious House), structural engineers Techniker Ltd (grand Design Amphibious House).
- On return, from travel research I will develop the design for ‘Zero-Point House’ in detail. I intend to collaborate with GrowUp Urban farms (for whom I prepared a planning application for their commercial Aquaponic Urban Farm) to incorporate Aquaponic Urban Farming and sources of sustainable food into the house design. Additionally I intend to collaborate with Electric Pedals to design a domestic gym, the ‘Power House’, that can generate electricity for the house from human power. Throughout the design process of ‘Zero-Point House’ I will work closely with dRMM, who have been commissioned to develop a prototype floating neighbourhood with the London Borough of Newham with the Mayor of London and Carillion Igloo in Royal Victoria Dock; there is much that is of mutual benefit and we will share this with one another.

PERSONAL AND PROFESSIONAL BENEFITS

We cannot overcome the current crises of climate change without changes in the living and working lifestyles of our citizens. By 2080 it is predicted that the cost of flood damage in the UK could increase 20-fold to more than 20 billion unless adequate funds are put into flood defences and preventing coastal erosion. Global-warming related flooding is formidable and we need to find ways to become more resilient to a more extreme and fluctuating climate. This research would be a benefit to a future generations of citizens living in the UK.

Some of the ambitions for higher density, increased affordability, place-making and improved environmental sustainability for buildings on water exceed our individual and governmental experience in the UK. Thorough online case studies providing knowledge of floating architecture in the Netherlands and in Nigeria, will benefit everybody from developers to individual house builders to local authorities to housing associations and many other governmental bodies.

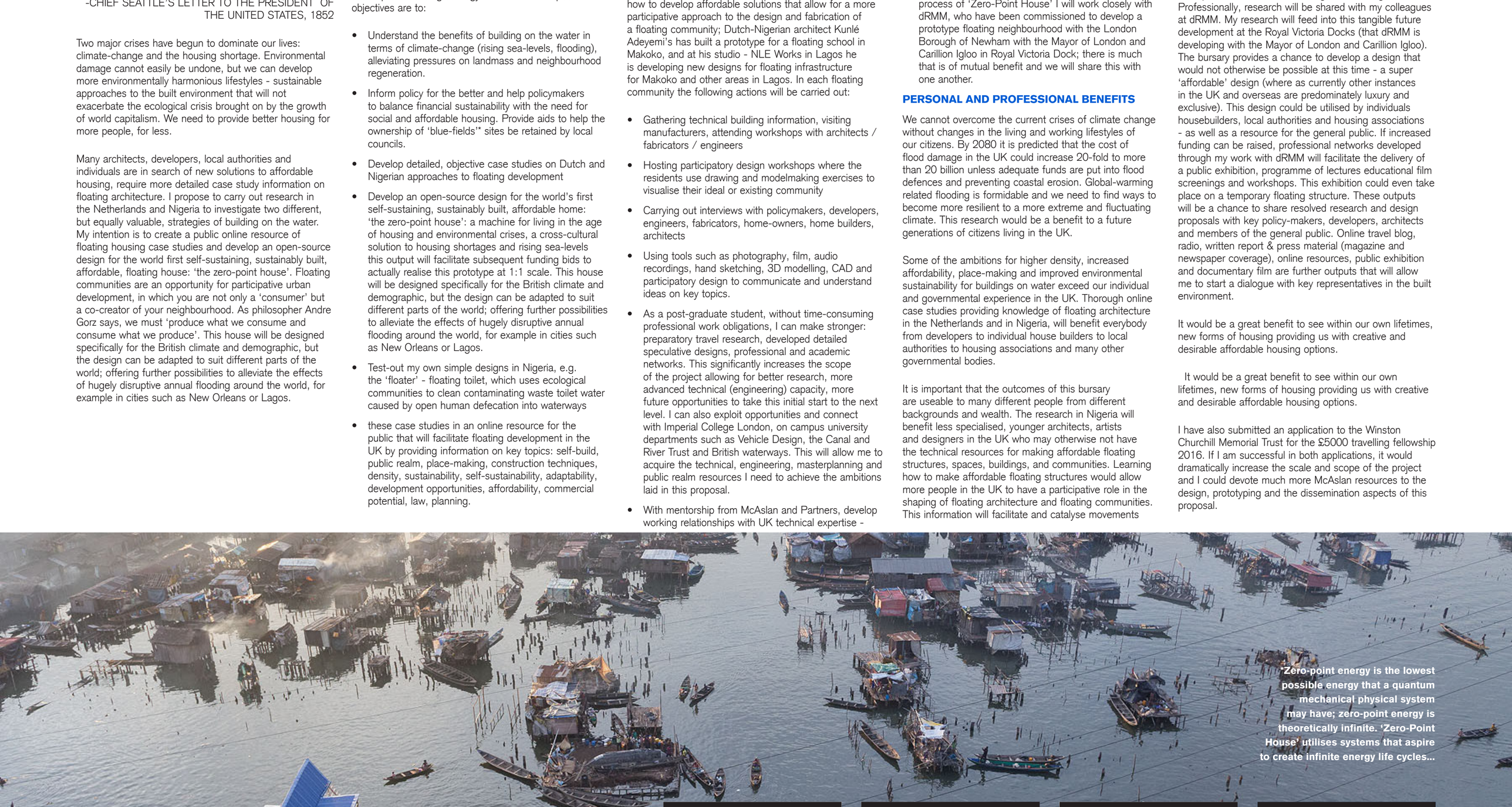
It is important that the outcomes of this bursary are useable to many different people from different backgrounds and wealth. The research in Nigeria will benefit less specialised, younger architects, artists and designers in the UK who may otherwise not have the technical resources for making affordable floating structures, spaces, buildings, and communities. Learning how to make affordable floating structures would allow more people in the UK to have a participative role in the shaping of floating architecture and floating communities. This information will facilitate and catalyse movements towards adaptable architecture that deals with climate change directly by making available policy information, technical information and financial information.

The proposal will benefit from my academic studio work, my technical study, my thesis and academic (public) exhibitions. My academic work will also benefit from the engineering mentorship provided by McAslan and Partners and financial resources; it is a symbiotic relationship of mutual benefit. However, the motivations stem from a deep desire to influence housing strategy in the UK and use my academic time to build up a portfolio that will have an impact on the built both during and once I graduate. Professionally, research will be shared with my colleagues at dRMM. My research will feed into this tangible future development at the Royal Victoria Docks (that dRMM is developing with the Mayor of London and Carillion Igloo). The bursary provides a chance to develop a design that would not otherwise be possible at this time - a super ‘affordable’ design (where as currently other instances in the UK and overseas are predominately luxury and exclusive). This design could be utilised by individuals housebuilders, local authorities and housing associations - as well as a resource for the general public. If increased funding can be raised, professional networks developed through my work with dRMM will facilitate the delivery of a public exhibition, programme of lectures educational film screenings and workshops. This exhibition could even take place on a temporary floating structure. These outputs will be a chance to share resolved research and design proposals with key policy-makers, developers, architects and members of the general public. Online travel blog, radio, written report & press material (magazine and newspaper coverage), online resources, public exhibition and documentary film are further outputs that will allow me to start a dialogue with key representatives in the built environment.

It would be a great benefit to see within our own lifetimes, new forms of housing providing us with creative and desirable affordable housing options.

It would be a great benefit to see within our own lifetimes, new forms of housing providing us with creative and desirable affordable housing options.

I have also submitted an application to the Winston Churchill Memorial Trust for the £5000 travelling fellowship 2016. If I am successful in both applications, it would dramatically increase the scale and scope of the project and I could devote much more McAslan resources to the design, prototyping and the dissemination aspects of this proposal.

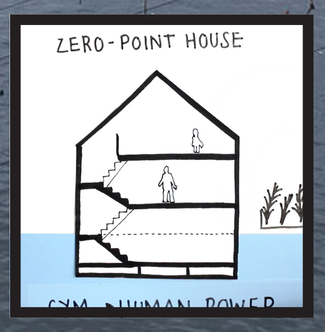


Floating School, Makoko, Nigeria, NLE Architects

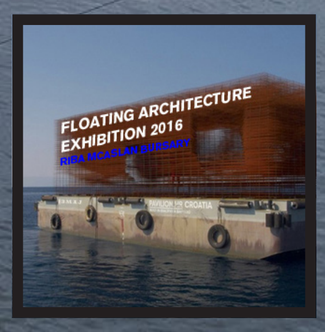
‘Zero-point energy is the lowest possible energy that a quantum mechanical physical system may have; zero-point energy is theoretically infinite. ‘Zero-Point House’ utilises systems that aspire to create infinite energy life cycles...

Written Report> Publication

Multi-media > Online resources, Documentary, Radio



Open-source design + manual, masterplanning



Exhibition on floating structure