10 x 10 Housing Project
Freedom Park
10 x 10 Housing Project, Freedom Park

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Executive Summary

Design Indaba’s 10x10 Housing Project challenged 10 architectural teams, composed of handpicked South Africans paired with international alumni of previous Design Indaba conferences, to provide dynamic, affordable, sustainable design solutions for the low cost housing sector, on a pro bono basis.

Phase 1 - ten units of the first qualifying design, by Luyanda Mpahlwa from MMA Architects - has been completed in Freedom Park on the Cape Flats, directly benefiting some of Cape Town’s most impoverished families. The attractive two-storey timber frame and sandbag houses draw on indigenous building techniques, are energy-efficient and have required little electricity or skilled labour to construct. Beneficiaries have been involved hands-on in every stage of the building process.

Design Indaba’s ongoing aim is stimulate wider debate and creative thought around the pressing issue of low cost housing delivery. This document compiles the experiences and outputs of the project’s Phase 1 at Freedom Park, warts and all. Information is provided in accordance with open source principles under a Creative Commons license.
Introduction

Design Indaba has remained committed over the past 13 years to a vision that rests on the premise that creativity will fuel an economic revolution in South Africa. We are a celebration of design in a country iconic of the triumph of human spirit, proof that even the most intractable problems can be neutralised by the will of people. Design Indaba typifies this optimism and can-do spirit. Starting from the basis of how design can help solve the problems of an emerging country, we take the view that a better future can be designed.

Background to the 10x10 Project

Design Indaba is an annual conference that gathers together the world’s brightest talent from across the creative industries. It is one of the few multi-sectoral events that celebrates all the creative sectors – the graphic design, advertising, film, music, fashion design, industrial design, architecture, craft, visual art, new media, publishing, broadcasting and performing arts sectors.

Design Indaba has become a well-established and respected institution on the creative landscape. Our stature has grown internationally, attracting ever-increasing numbers of international delegates. “It’s the greatest design conference in the world”, declared Icon magazine in May 2006, a remarkable accolade for a South African event. In 2005, the Design Indaba Conference was awarded the EIBTM award for Best Conference in the World and, in 2007, won gold at the Loeries for Best Live Event.

Focusing on bringing international thought leadership into South Africa since 1995, the Design Indaba Conference now hosts more than 40 speakers and 2500 delegates. In turn encouraging local creativity to go global, the Design Indaba Expo has provided a commercial platform for South African designers to showcase local goods and services to the global market through influential international buyers since 2004.

Besides the flagship conference and expo, Design Indaba has expanded into a multi-tiered experience that incorporates other events, media, education, training and business development.

To celebrate the 10th anniversary of the Design Indaba, spin-off projects were launched to encapsulate the best of design in a unique project setting. Known collectively as Design Indaba 10 x 10s, these projects further promote the design industries in South Africa by bringing together Design Indaba alumni to create a brand image from which others can benefit.

Design Indaba 10x10 Housing Project

A Design Indaba Community Project

Low-cost housing is an issue of huge social relevance in South Africa, and indeed globally. Statistically it is significant that this past year, for the first time in history, 50% of the World’s population have been resident in urban areas. The impact of this is particularly visible in the townships and urban sprawl of informal settlements around South African cities.

A number of national housing initiatives were given a high profile by South Africa’s erstwhile Minister of Housing, Lindiwe Sisulu. The Minister also communicated the government’s encouragement to developers, financial institutions and the construction industry to deliver on the visions and goals of the National Housing Policy.
The 10 x 10 Low Cost Housing Project challenged 10 architectural teams to provide dynamic design solutions for the low cost housing sector (on a completely pro-bono basis), with the intention of creating 10 distinct designs that would change the perception that low-cost housing is outside the realms of design innovation and architectural significance.

Ten hand-picked local architects were paired with ten international alumni from previous Design Indaba conferences. The objective was to come up with affordable, innovative responses to the very pressing issue of low-income urban housing. Sustainable, energy-efficient design, construction and operation principles were to be incorporated.

This report compiles experiences and outputs in an open source format, and is intended to be a contribution to the public pool of knowledge available to all interested in the design or construction of low-cost housing.

In this way, the 10 x 10 Housing Project’s aim has been to “create a better future, by design”. The project has been experimental in nature, and has thus been challenging. Despite difficulties encountered, a clutch of Cape Town’s most impoverished families have benefited directly, and, through media coverage and awards garnered, the project has achieved its overarching goal of stimulating wider debate and creative thought around the delivery of low-cost housing.
Aim & Objectives

The following were the stated goals at the outset of the project in 2007:

The compelling differentiator for this project is that in one unique exercise we will encourage a range of Architects to bring design innovation to a traditionally uninspired process. Further, by building these houses we can evaluate the outcomes and provide prototypes for future users. While encouraging innovation we will ask our teams to consider the body of work previously undertaken. This project is to advance the cause not to reinvent the process.

Our objective is to produce the very best design solutions from within South Africa, supplemented by an international overview. The designs will need to fit within the parameters of size and cost considered appropriate for a low cost housing project of this nature.

In addition the designs should consider all of the innovative techniques and materials that will deliver a sustainable solution for the short and long term use of these houses. Specifically, design aspects relating to ease of construction, use of modular components, optimum thermal properties to reduce energy costs and user preferences will all be considerations.

To fully capitalise on this unique set of designs the project will support the building of the 10 houses. The vision of Design Indaba is to leave a lasting legacy. The 10 houses will be given to 10 families and the design principles will be encapsulated within a descriptive manual for presentation to the Minister of Housing to assist her Departments Vision and for inclusion in the Low Cost housing database. Potential use beyond South Africa in other areas of urban poverty will further justify the objectives of this project.

As for constraints upon the designs, the spread of solutions should take into account the financial limits imposed by the housing subsidy to which all low cost housing projects need to adhere.

* * * *

At the outset of the 10x10 project in 2007, the Government Housing subsidy for the poorest applicants was at R 36 528 for a 30 m2 dwelling. The original objective was to deliver a house design for a plan area of up to 42 m2 and within a construction budget of R 50 000. This budget was to include internal fit-out, assuming electricity and sewerage would be provided to the plot.

The budget was later adjusted to R 65 000 to compensate for the very high levels of inflation experienced in the construction industry during 2007/8, also taking into account that the designs were prototypes which would obviously benefit from economies of scale if rolled out in greater numbers.
Architectural Brief

• Each of the 10 x 10 teams will be led by a South African Architect, supported by a DI International Alumni.
• Each house will have a floor area of between 36m² and 42m²
• The range of building costs for each dwelling is to be limited to within the range 45,000 - 50,000 Rand
• Each design must consider and demonstrate constructability issues, e.g. modular construction, mass production techniques
• Each unit must consider and demonstrate sustainable, energy-efficient design, construction and operation techniques
• Sewerage systems should consider grey water re-use within a whole development context
• Each design should be accompanied by a statement on how the individual dwelling would fit into an urban framework – what are the spatial and performance criteria?
• Details should be provided of how the design will provide employment and benefit the broader construction economy
• With our sponsor being a major building material supplier, possible commercial opportunities that could emanate from the design should be explored.
The Architects

Team 1

Cameron Sinclair (San Francisco)

In 1999 Sinclair co-founded Architecture for Humanity, which seeks architectural solutions to humanitarian crises and brings design services to communities in need. Currently the organisation is working in a dozen countries on projects ranging from health centres in Sub-Saharan Africa and community centres in Southeast Asia to low-income housing on the Gulf Coast of the United States.

In 2007 Architecture for Humanity launched the Open Architecture Network, the world’s first online community dedicated to improving living conditions through innovative and sustainable design. Sinclair and Architecture for Humanity co-founder Kate Stohr compiled the first ever compendium on socially conscious design titled Design Like You Give A Damn: Architectural Responses to Humanitarian Crises. He has taught at the University of Minnesota and Montana State University and lectures regularly at schools in the United States and abroad. He has spoken at a number of international business and design conferences on sustainable development and post-disaster reconstruction, including guest appearances on BBC World Service and CNN International, National Public Radio and PBS. Sinclair was named as one of three winners of the 2006 TED Prize, which honors visionaries from any field who have shown they can "positively impact life on this planet".

Jo Noero (Cape Town)

Currently Professor of Architecture at the University of Cape Town, Jo Noero started his studies at the University of Natal with a Bachelor’s Degree in Architecture. He then completed a Masters in Philosophy at the University of Newcastle-upon-Tyne in the UK, and now also has an Honorary Doctorate of Science from the University of Brighton. He has lectured at Wits, the Washington University, the University of Oregon as well as various international seminars. Noero Wolff Architects was established in 1985 as Jo Noero Architects. It was changed to Noero Wolff Architects in 1998 when Heinrich Wolff became a partner in the practice.

Noero Wolff have designed buildings throughout Southern Africa as well as the United States. Their work has been extensively published both nationally and internationally and has won many awards. In addition, the practice has won a number of architectural competitions including the competition for the design of the Museum of Struggle in Red Location, New Brighton, South Africa. The work of the practice is varied both in scale and type and ranges from individual houses to large-scale cultural and educational complexes.
**Team 2**

**Lindy Roy (New York)**

Lindy Roy was born in Cape Town, South Africa in 1963. She received a B.Arch from the University of Cape Town in 1985 and an M.Arch from Columbia University in 1990. After graduation she worked in the office of Peter Eisenman, then taught at Princeton University, Rice University, Columbia University and the Cooper Union. In 2000 she founded ROY Co. in New York City's Meatpacking District, where the studio remains.

Roy's major projects include the headquarters for Vitra USA, Andre Balaz's Hotel QT, L'Oreal's Living Labs, an extreme heli–ski hotel in Alaska, the Okavango Delta Spa in Botswana, the Poolhouse in Sagaponac, and High Line 519, an 11–storey condo building in Manhattan, currently under construction. Roy was included in a group of internationally recognised architects commissioned by the New York Times Magazine to re-conceptualise the development of the World Trade Centre site.

She collaborated with photographer Richard Misrach on a large–scale conceptual project addressing the eco–political disaster known as Cancer Alley. In 2000 she was invited by Issey Miyake USA to develop a design for their flagship store and headquarters in New York. She was the 2001 winner of MoMA/P.S.1 Young Architects Competition and a winner of 16 Houses, a Houston competition seeking designs for affordable housing. She was invited to participate in the New York Times Magazine's Time Capsule competition. Roy's work has been published widely in the US and internationally.

**Vanessa September (Cape Town)**

Once a year, Vanessa September, her seven siblings and her parents would set out from their 2–roomed house in a poor neighbourhood to go the beach. As the train passed the elegant houses of people in the whites–only suburbs, she determined one day to build 'houses like that for people like us'. Before completing her secondary education, however, she had to leave school, and worked for 16 years in factories, retail stores, banks and restaurants, to financially support her family. In 1994 South Africa held its first democratic elections and with it came many opportunities for people previously denied access to the country's educational resources. September returned to high school at the age of 30, matriculated, and went on to University of Cape Town where she completed a 6 year degree in architecture in 2003.

Her first projects, with a team in Cape Town, involved adding classrooms and halls to schools in the Western Cape. She then spent two years as part of an architectural and urban design team in Johannesburg involved in the urban renewal program of the Greater Ellis Park Development in preparation for the 2010 Soccer World Cup, and developing a Reception Centre for the City of Johannesburg's Metro Centre.

*Her 'biggest project' at the moment is raising her son Oliver, born in October 2006. She is also working as a consultant for the Western Cape government on the Creative Precincts Programme in Mannenberg and Nyanga and designing housing for farm workers in Onseepkans on the banks of the Orange River.*
Team 3

Will Alsop (London)

Will Alsop is one of the most prominent UK architects. His practice is an international operation, but one guided by the principle that architecture is both vehicle and symbol of social change and renewal.

The philosophy extends from the design of individual buildings to embrace broader principles of urbanism and city development. By abandoning the hegemony of an acceptable style, he has rendered the whole process of architecture one of increasing fluidity and transparency; a new and refreshing position for architecture.

Will Alsop follows a parallel path as an artist, feeling that it is a discipline inseparable from architecture. He was a tutor of sculpture at Central St Martins College of Art and Design, London, for several years, has held many other academic posts, and actively promotes the artistic contribution to the built environment.

His paintings and sketches have been exhibited alongside his architectural projects in dedicated exhibitions at Sir John Soane's Museum, Milton Keynes Gallery, Cube Gallery, Manchester, the British Pavilion at Venice Biennale and many others.

Luyanda Mpahlwa (Cape Town)

Luyanda Mpahlwa started his degree in architecture at the University of Natal in 1978 and proceeded to the Natal Technikon in 1980–1981, as one of the first black architectural students at that time.

He was arrested for political reasons while writing his final exams at Tech in 1981 and managed to complete his National Architectural Diploma while serving a five year prison term on Robben Island Prison between 1982 and 1986.

Mpahlwa left for exile in Germany in 1986 and completed a Masters Engineering Degree in Architecture (Dipl.–Ing) in 1997 at the Technical University of Berlin, Germany. Title of Master's Thesis: “Transformation of Robben Island from Political Prison to International Centre for Peace.”

Mpahlwa returned to South Africa from Germany in 2000, and is now principal and director of MMA Architects, Cape Town. In Cape Town, Luyanda has built and developed the profile of MMA Architects into an emerging black-owned firm and an established player in the architectural and design fraternity in South Africa. MMA also has offices in Johannesburg and Berlin, Germany. MMA have been involved in the designing of the South African Embassies in Berlin and Addis Ababa, the Bishop Tutu Peace Centre, as well as various hospitals and schools for the Department of Public Works.

Mpahlwa is a Member of the UCT Council and part of the Urban Dialogue on Cities: An Initiative of Isandla Institute and the Cape Town Partnership.
Team 4

Christophe Egret & David West (London)

Studio Egret West, established in November 2004, brings together visionary urban design and uplifting, distinctive architecture within one studio, providing strategy and specificity in equal measures.

Christophe Egret Dip Arch (AA) RIBA is an architect with 20 years experience on local and international projects. His formative years include working with Norman Foster, Ian Ritchie, John McAslan, Nigel Coates and Ron Arad. He spent 10 years as a director of Alsop working closely with William Alsop, directing and managing the designs of, among many others, the Peckham Library (winner of the RIBA Stirling Prize 2000), Queen Mary and Westfield College Research Laboratory in Whitechapel, the new third millennium Village: New Islington in Manchester, and the winning design for the Fourth Grace in Liverpool.

He is a frequent lecturer on architectural matters and subjects ranging from design, residential development, community involvement, painting and colour. Christophe also sits on a number of advisory boards including the Whitechapel Gallery advising on design and procurement and is a founder member of the Islington International Festival and CABE.

David West BA Hons MTP MAUD is a town planner and urban designer specialising in urban visions and strategic framework plans. Since graduating from Manchester University / TU Delft, Holland, West's experience has been diverse and worldwide. Previously at Alsop, he established and directed the "BIG Architecture" group that formulated a series of radical urban strategies that genuinely challenged conventional or ingrained thinking about places.

Early work at Alsop included the planning aspects of the Rotterdam Centraal Masterplan, the urban design of Green Square in Sydney and the Strategic Urban Design Frameworks for New Cross Gate, Lewisham and Leicester.

Andrew Makin & Janina Masojada (Durban)

Andrew Makin and Janina Masojada head OMM Design Workshop, a Durban-based, 20-strong design practice.

Begun as a loose collaboration of architects sharing space, ideas, work and ambition, OMM Design Workshop became a formalised entity in 1997, following their winning of the international architectural design competition for the new Constitutional Court of South Africa. Since that momentous occasion, they have gone on to design other landmark buildings around South Africa, across a wide range of sectors, and win numerous awards.

They have acted as strategic concept designers for a number of important projects including the International Convention Centre Arena in Durban, the new King Shaka
International Airport and the Dube Trade Port for the Province of KZN. Projects have also been undertaken in the UK, US and New Zealand. They continue their culture of collaboration in order to benefit, both personally and professionally, from exposure to the skill, resources and life experiences of others. Their innovative practice is established upon a deep commitment to South Africa's dynamic culture, growing economy and ever-changing society.

Mark Horner has recently joined Makin and Masojada as a third partner, and Carina Strauss has been appointed as an associate.

Team 5

**Thomas Heatherwick (London)**

Born in London, Thomas Heatherwick trained in 3D design at Manchester Metropolitan University and at the Royal College of Art, London. He is a Royal Designer for Industry, a Senior Fellow of the Royal College of Art and was awarded an honorary doctorate by Sheffield Hallam University.

Established by Thomas Heatherwick in 1994, Heatherwick Studio makes unique design projects, bringing together architecture, design and sculpture. Heatherwick Studio has the creative involvement of three associate directors: Fred Manson, architect and formerly Director of Environment for London Borough of Southwark; Ron Packman, structural engineer and mentor to the studio since its inception; and Maisie Rowe, landscape architect and associate of the studio since 1998.

The practice operates from a studio and workshop in Kings Cross, London, where a team of 35 is led by managing director Nader Mokhtari. This is an environment in which project management and implementation takes place in parallel with modelmaking, prototyping and experimentation with ideas, materials and manufacturing processes.

**Silvio Rech & Lesley Carstens (Johannesburg)**

Silvio Rech and Lesley Carstens have spent the past ten years developing a "handcrafted haute couture" body of work in Africa. Part of the design philosophy has been to live on site in exotic locations, doing one project at a time, developing a total design and creating a new language of architecture and a lifestyle particular to each situation.

Most works have included an element of skills transfer to local communities from the core team of builders that they’ve gathered from all over Africa. Works prior to 1993 were of a modern nature and in large cities in South Africa. Since then, they’ve created Makalali Bush Camp, winner of the most innovative Hotel Design of the Year from Tatler Travel; Ngorongoro Crater Lodge; House Westcliff; North Island and many more. All have won awards and been published widely.
Team 6

Eva Jiricna (London)

Eva Jiricna Architects Limited (EJAL) is an architectural and design practice based in London with an international portfolio of residential, commercial and retail interiors, furniture, products and exhibitions, private and public buildings.

The practice is at the forefront of innovation in terms of form and technology, with highly crafted and detailed designs that employ classic materials – glass, steel and stone – in a thoroughly modern language.

EJAL is run by its founder, Eva Jiricna, a Czech–born architect who has been based in London for over 30 years. Jiricna's wide experience includes working at the Greater London Council on her arrival in the UK in 1968; the Louis de Soissons Partnership and the Richard Rogers Partnership – where she was responsible for the interior design packages for the Lloyds Headquarters building. With Jan Kaplicky and his practice, Future Systems, she designed the Way In store at Harrods, an award–winning scheme that influenced a generation of retail interiors. Over the last decade, Jiricna's contribution to architecture and design has been recognised with personal awards, including being made a Royal Designer for Industry (RDI), a CBE (Commander of the British Empire), election as a Royal Academician by the Royal Academy of Arts, and induction in the American Hall of Fame.

She holds honorary doctorates from several universities, participates on international juries and lectures widely on her work.

Stefan Antoni and Mark Bullivant (Cape Town)

Stefan Antoni is a partner in the firm Stefan Antoni Olmesdahl Truen Architects (SAOTA) set up in 1987. The firm is currently working in South Africa, West Africa, Seychelles and Europe. Their work is characterised by the design of dynamic and sculptural spaces with an emphasis on clean lines and attention to detail. Their questioning attitude and their regard for their client's needs and lifestyles underpins their business philosophy.

Mark Bullivant graduated from UCT with distinction in 2006 and began working at SAOTA in 2007. Architecture is his primary focus and he supplements his creative ambitions in furniture, product and graphic design, all of which he envisages as architecture. His goal is consistent: to be provocative and thoughtful with a measured amount of wit.
Team 7

Mark Dytham (Tokyo)

After graduating from Newcastle University in UK in 1985, Mark Dytham worked with Skidmore Owings and Merrill (Chicago and London) before completing a Master of Arts degree in architecture (Royal College of Art, London).

Winning a scholarship to Japan in 1988, Dytham set off on what was to be a three-month tour. Discovering many wild, weird and wonderful things to see, Dytham stayed on, spending three years with Tokyo firm Toyo Ito Architects & Associates before establishing Klein Dytham Architecture in Tokyo in 1991 with partner Astrid Klein. Dytham was honoured in 2000 with an MBE for services to British Architecture in Japan.

As well as maintaining a busy practice, Dytham is assistant professor at Tokyo Science University and a lecturer at Hosei University. Dytham and Klein devised the presentation format for Pecha Kucha, as a way to attract people to SuperDeluxe, an event space they had set up in Tokyo's Roppongi district. The Pecha Kucha format – showing 20 slides of your work, for 20 seconds each – has spread to many cities across the world.

Ruben Reddy (Durban)

Through their knowledge, innovation and commitment to excellence, Ruben Reddy Architects contribute to a better environment by producing an architecture that is relevant through its connection in: TIME by interpreting and applying technological advancements while continuously striving for social and environmental sustainability; PLACE by achieving environmental integration and balance; and ETHOS with applications that are honest in interpreting the ideals of democracy and reflecting the needs of society.

Ruben Reddy, on completing his studies at the University of Natal School of Architecture immediately started a consulting practice. He formed a partnership with Erik Orts–Hansen (currently with Koski Solomon and Ruthven–UK) in Durban under the name of Orts–Hansen and Reddy Architectural Graduates.

In 1992 the practice was reformed as Ruben Reddy Architects and Development Professionals.

The principal focus of the work was to undertake projects with a strong political conscience. The practice concentrated on assisting communities, labour organizations and emerging businesses with their developmental needs in the changing South African political environment.
Team 8

David Adjaye (London)

David Adjaye is now recognised as one of the leading architects of his generation in the UK. He formed a partnership in 1994 and quickly developed a reputation as an architect with an artist's sensibility and vision. His ingenious use of materials, bespoke design and ability to sculpt and showcase light have engendered high regard from both the architectural community and the wider public.

He reformed his studio in June 2000 as Adjaye/Associates and has since gone on to win a number of prestigious commissions. Projects have been diverse in scale, audience and geography: collaborations with artists such as Chris Ofili and Olafur Eliasson, exhibition design, temporary pavilions and private homes – both in the UK and New York. More recently, major arts centres and important public buildings across London, Oslo and Denver have demonstrated Adjaye's considered approach to understanding the needs of the constituency served by each building and a respect for integration with their existing locale.

In June 2007, he was awarded an OBE for services to architecture in the Queen's birthday honours list.

Martin Kruger (Cape Town)

Martin Kruger is a painter, architect and urbanist, and a founding member of the Urban Design Institute of South Africa. Kruger leads a dynamic group of young architects in their Cape Town studio with Pedro Roos, now based in London.

StudioKrugerRoos has won numerous awards of excellence for urban design and architecture during their 10 years of existence. Kruger's practice believes in the evolving design process of teamwork, intense client interaction and a continuous journey towards excellence and simplicity. Their philosophy of "all buildings are cities, and the city a big house" is applied to all their concepts.

The practice has won several design competitions, most notably for the award-winning BP Southern Africa head offices, the University of Pretoria Law Faculty building, and the Early Childhood Enrichment Centre in Brown's Farm. They were also runners up for the Freedom Square competition in Kliptown, Soweto. Their projects have been published in Architectural Review and Phaidon's Atlas of World Architecture. The studio investigates design problems on a variety of scales and in diverse contexts.

Their work includes exhibitions, conservation work, new settlements, public spaces and public buildings, as well as a number of diverse and beautifully crafted private houses and farmsteads.
Team 9

Shigeru Ban (Tokyo)

Shigeru Ban (born 1957 in Tokyo) is an accomplished Japanese and international architect, most famous for his innovative work with paper, particularly recycled cardboard paper tubes used to quickly and efficiently house disaster victims.

Shigeru Ban was the winner in 2005 at age 48 of the 40th annual Thomas Jefferson Medal in Architecture from the University of Virginia in Charlottesville. He was profiled by Time Magazine in their projection of 21st-century innovators in the field of architecture and design. Ban has become one of the forerunning Japanese architects who embrace the combination of Western and Eastern building forms and methods.

He fits well into the category of "ecological architects" but he can also make solid claims for being modernist, a Japanese experimentalist and a rationalist. "I don't like waste" is an apt quote from Ban, summing up his philosophy, known as "paper architecture." Ban's work with paper and other materials is heavily based on principles of sustainability.

Ban is attracted to using paper because it is low-cost, low-tech, recyclable, replaceable and because it produces very little waste. He was the first architect in Japan to construct a building primarily out of paper and required special approval for his building to pass Japan's building code.

In addition to the Ban's ecological awareness, there is a humanitarian aspect to his work too. As a result of this, Ban's DIY Refugee shelters (used in Japan after the Kobe earthquake, as well as in Turkey, Rwanda and around the world) are very popular and effective for low-cost disaster relief housing.

Henning Rasmuss (Johannesburg)

Henning Rasmuss designs and implements exhibitions on Johannesburg's architecture, writes on architecture and cities, teaches and lectures on invitation, and is an external examiner at two universities.

He considers travel a form of research and has been all over Europe, to Russia, the Czech Republic, Japan, China, Brazil, Argentina, Morocco, Vietnam, Cambodia, Thailand, Malaysia, Angola, Zambia and Namibia. He has been involved in exhibitions since the Venice Biennale in 2000, and formed sharpCITY as an urban research, events and exhibitions company in 2005, together with Thorsten Deckler and Anne Graupner.

He was one of eight nominees for the DaimlerChrysler Award for South African Architecture 2007, with a travelling exhibition that will be shown in Berlin and Bayreuth in Germany, as well as in Cape Town, Pretoria and Durban.
Team 10

Tom Dixon (London)

TOM DIXON the company was started by Tom Dixon and David Begg in 2002. Since its inception, the company has developed its own collection of contemporary lighting and furniture including the acclaimed Mirror Ball Collection of lights and more recently Copper Shade.

TOM DIXON designs have entered the international major league through renowned shows at major venues like the Milan Furniture Fair and the London Design Museum, where Dixon is currently nominated for Designer of the Year.

Dixon the designer is particularly well known for his earlier designs such as the S–chair, designed for Cappellini, and the rotationally moulded Jack Lamp that gained the Millennium Mark for Great British Design in 1998. He was awarded the OBE for services to British Design in 2000.

Dixon is a self–educated maverick whose only qualification is a one–day course in plastic bumper repair.

Don Albert (Cape Town)

After graduating from the University of Natal in 1998, multiple award-winning architect and founder of SoundSpaceDesign, Don Albert applied for a Fulbright Scholarship. He spent three productive years in Los Angeles completing his Masters in Architecture (Urban Design) at the University of California, Los Angeles, and a year as design associate at the office of Barton Myers Associates (BMA), Beverly Hills.

Apart from traditional urban issues such as transportation and housing, the cultural, spatial and intellectual impacts of new technologies such as the internet, virtual space, computer generated design, research and manufacturing were tested in Albert's Masters thesis: "Urban Placemaking in Rapid Development, A Counterproposal for Malaysia's Cyberjaya Technopole."

During this period Albert conducted research in Malaysia, Europe, Cuba, Mexico, Hawaii, South Africa and the United States, developed new urban design strategies for emerging work and living environments based on typological, diagrammatic and computer-generated means that are highly modified by place-specific inputs (climatic and cultural), and presented a master–planned counterproposal for Malaysia's premier techno–city.

Returning to South Africa in 1999, Albert has steered soundspacedesign through a number of high profile and internationally published projects, including the Millennium Tower, Durban, and the highperformancentre, at the University of Pretoria.
The History of Freedom Park before 10x10

Freedom Park is one of about 200 informal settlements in the Cape Metropolitan Area which house approximately half a million people in more than 100 000 dwellings. This accounts for 16.1% of Cape Town’s population or 60% of the households living without formal shelter.

The site is situated in the township Mitchell’s Plain on the outskirts of the City of Cape Town. Mitchell’s Plain is a typical example of an area that was created in the 1970s to relocate thousands of families from the inner city to racially segregated areas under the Apartheid Group Areas Act. Today Mitchell’s Plain accommodates more than 300 000 people, but it remains a desolate area with high levels of unemployment, poverty and crime (information courtesy of the Development Action Group).

Locality Map of Freedom Park

Freedom Park came into existence on 27 April 1998, when a group of people organised an occupation of the land and built themselves shacks on the property. The move was motivated by the need for housing as the conditions in which people had resided were overcrowded, expensive and unsatisfactory for healthy living.

The City of Cape Town took legal action against the community to have them removed from the property. But as the community organized themselves in a democratic structure and arranged legal support, an agreement between the City of Cape Town and the Freedom Park community was reached to resolve the matter out of court. During the ensuing mediation process, the City of Cape Town was required to install emergency services which consisted of public standpipes, communal toilets and weekly refuse removal.

In 2003 the City of Cape Town at last included the Freedom Park community in a broader housing development through which 1800 houses were to be built on 4 sites in the Mitchell’s Plain area.

493 of these houses were to be built at the Freedom Park site to accommodate the 280 families residing in the Freedom Park informal settlement, as well as 213 families from the City’s waiting list.
In 2007, Design Indaba 10x10 Low Cost Housing Project signed a Memorandum of Agreement to locate the houses to be designed by our participating architects at Freedom Park, after liaising with the Freedom Park Development Association (the civic organisation formed to look after the interests of residents in the area), together with Development Action Group (an NGO specialising in support and implementation of community-centred development) and the Niall Mellon Township Trust (an Irish-owned property development charity organisation working in the area). We were allocated 10 adjacent plots on which the Design Indaba 10x10 houses would be built.
Beneficiaries

The houses were to be given free by Design Indaba to ten families. It was important to identify who those families were to be in an equitable way. We explained the experimental nature of the project to the community and invited all residents willing and eligible in terms of the City’s waiting list for housing to participate in a lucky draw, audited by KPMG.

On a cold, wintry Cape morning in mid-June 2007, ten beneficiary names were drawn by members of our team, the Freedom Park community and partners.

The winners of the houses were:

George Jochems
Rebecca Monyatsi
Hans Jonkers
Elizabeth Krigga
Moerida Pillay
Joseph Willoughby
Gavin Arendse
Mary Lackay
Mushrah Anthony
Vida Poovan

Workshopping was done with the beneficiary families to introduce the project and its objectives, and to ascertain their personal wants and needs in terms of design. Reference videos of each family with these details were sent to the architectural teams as part of the brief.

Beneficiaries were involved hands-on in every stage of the building process. The project has provided local people, mostly women, with employment as well as experience in working with a sustainable building system.
The following are some pictures of people from our beneficiary families outside the homes they were staying in before their involvement in the Design Indaba 10x10 Low Cost Housing project.

The Anthony family

The Arendse family
The Jochems family

The Jonkers family (beneficiaries of the first house)
The Krigga family

The Lackey family
The Monyatsi family

The Pillay family
The Poovan family

The Willoughby family

(Photos: Yasser Booley)
Phase 1: Freedom Park

The first 10x10 design to qualify within the very tight budget stipulated, while fulfilling all criteria, was that of MMA architects’ Luyanda Mpahlwa, assisted by Kirsty Ronne. Luyanda had been teamed with Will Alsop but their visions for the project diverged too widely to enable fruitful collaboration.

A decision was taken, in the interests of expediency, that 10 of this first design would be built on the designated plots in Freedom Park, as the first phase of the Design Indaba 10x10 Housing Project. None of the other teams had managed to fulfil all criteria by that stage. The main stumbling block had been the budget.

The intention was to take other teams’ design solutions on board as they came through changes, approvals and workshops and ultimately to build 10 of each. Thus, in essence, there would be 10x10 = 100 houses instead of just 10.

On reflection it was decided that the impact of 10 houses of the same design in an urban context would be greater than a hodge-podge “show village” of different houses.

The other architects working on 10x10 were in agreement with this – here is an extract from an email message from Eva Jiricna’s practice:

"Urban context & scope of project

Creating a number of isolated ‘trophy houses’, bearing names of well known architects, doesn’t bring the contribution to the community that we feel you as the organisers and we as a design team are capable of, and should be delivering. In practical terms, we need to look at how the houses form a street, what will be its frontage, and how the street will work in terms of the local community structure. We therefore completely agree that the scope of the project should be broadened and we should look at the houses as part of future urban fabric rather than one-off stand-alone units.”

MMA architects’ 10x10 design, the first to qualify for construction.

The proposal received from MMA seemed most likely to fit the 10x10 brief in all respects. It was innovative, cost effective, aesthetically pleasing and was delivered
MMA’s design, timeously with sufficient detail.

MMA’s design for a single-family home leveraged the modest budget by borrowing elements from indigenous mud-and-wattle building techniques. The design forgoes traditional brick-and-mortar foundations in favour of a two-storey frame of timber and sandbag infill construction, which is both energy-efficient and requires little to no electricity or skilled labour to construct. The intention was to build the houses with help from local women in the community.

Ecobeams

The MMA house was to be built with an innovative building system, called Ecobeams, designed by engineer Mike Tremeer, which had already been used to build several houses in the Cape Town area. The Ecobeam system has been extensively tested and complies with all NHBRC requirements. Mike Tremeer offered to oversee the building of all the houses at Freedom Park using this system.

The following information was received from Ecobeam regarding the properties of their system:

Advantages of the Ecobeam System of construction

- Construction can take place at locations to which road access is not provided. This reduces the damage and congestion caused by heavy trucks which carry bricks and cement.
- No electricity is required at the construction site and only minimal amounts of water and cement are required.
- Tremendous thermal stability: The occupants will be kept cool in summer and warm in winter. The system also has excellent sound absorbing properties which help to provide a measure of privacy in close quarter living.
- Heavier than brick construction and therefore wind resistant.
- Resists water penetration due to the fact that the sand in the bags is a filter medium – any water penetrating the plaster will simply “filter” down to the damp-course and exit the wall to the outside.
- Fire resistant.
- Construction rate is rapid.
- The walls are bullet-proof.
- Ecobeams are light in weight and can be easily handled by one person in all phases of the construction.
- The only "wet" trade required is the plasterer. The plaster adheres easily to the sandbags and chicken wire that covers the walls. The Ecobags are made wet before the plastering process.
- The wet bags behind the plaster enable the plasterwork to cure instead of merely drying, as it does in standard construction. The end result is a hard, reinforced cement finish.
- No bricks lie around the site before, during or after completion, thus eliminating site-clearing, which is a major cost factor on any building site. Unused bags can be removed from the site overnight thereby reducing the incidence of theft.
Luyanda Mpahlwa on MMA’s design process
The following text was originally submitted by Luyanda Mpahlwa to the Mail & Guardian in March 2008.

MMA’s Luyanda Mpahlwa writes about the process of creating and realising new housing solutions for the Design Indaba 10x10 Low-Cost Housing Project in Mitchell’s Plain, a development launched at Design Indaba 2008 in Cape Town.

The brief
Last year the Design Indaba invited architects to design ten low cost houses on ten sites in partnership with ten international architects, for ten families. Our firm, MMA Architects, were paired with British architect Will Alsop and after a process of consultation and selection we were allocated a family in Freedom Park on Mitchell’s Plain. The Jonkers family stands to benefit from our design and in preparation we were issued by Design Indaba with a DVD documentary of the family. In it their profiles and wishes were conveyed. Due to differing design approaches however, the collaboration with Will Alsop had to be terminated.

The initiative is part of the development of Freedom Park by Niall Mellon Developers with 490 Units to be built. The brief for each Architect has been to design a house within the limits of the Government subsidy which allows a R50 000 allocation per household for a 40m2 house.

At MMA we set ourselves the objective of attempting to find a design solution that could make a contribution to the broader national debate on housing delivery. In our view Architects and Urban Planners in South Africa have not been involved in the roll-
out of housing delivery as independent professionals. As a matter of fact, housing delivery although driven by Government, is largely being delivered by Developers. It is therefore fair to say that the non-involvement of Architects and Urban planning professionals in the housing delivery process has been to the detriment of this process, and has led to the neglect of urban quality of life. We feel that the Professional bodies involved in the built environment need to find creative ways to unlock the lack of involvement in this critical field of delivery in South Africa.

It was therefore important for MMA, in responding to the 10x10 Housing Project, to find solutions which also seek to address some of the challenges facing the country in the housing sector. These involve providing designs which offer dignified housing and quality of life in Freedom Park. We wish to address the quality of the low-cost house in general, while exploring possibility of sustainable and appropriate design.

There is obviously a need to achieve solutions that could increase the speed of housing delivery in general that would include innovative and alternative building methods.

Obviously this approach has gone beyond 10x10, and so we have broadened the scope of the brief. It became very clear early in the design process that the collaboration with Will Alsop was not going to achieve the desired results. The broader social considerations, and the response to the aspirations of providing a house for a “real family” which had specific needs, were not shared by the British Architects. Unfortunately, then, MMA pursued the design on its own. In the exploration and research which followed, at our Cape Town office we put together a team of four including principal architect Luyanda Mpahlwa, Uli Mpahlwa, Sushma
Patel and Kirsty Ronné to workshop the design parameters. Ronné, the young architect and designer was then allocated to drive the design process forward.

**The process**

Our main challenge has been to reduce the costs of the 10x10 house. We recognise that conventional building methods and materials are not going to achieve results and so alternative, more affordable building methods have been required. This is something very difficult to achieve in south Africa, given the dominance of bricks and mortar as the “accepted” way of building.

And given the fact that the plot sizes (112m2) were predetermined, our team has considered it necessary to maximise the usable area by minimising the building footprint as much as possible. A double storey unit was therefore proposed as the most land-use efficient option for our design. This approach posed further challenges with respect to the 40m2 limitation of the brief.

So a compact design evolved, on a limited footprint but with architecturally pleasing aesthetics. We have intended to create a positive urban quality and street edge layout. The building has been consciously located close to the street edge in order to maximise garden space at the back, and hard-up on the lateral boundary to create an outside garden and play area for the family. This design resulted in the location of the living, kitchen/dining and wet areas in the ground floor area which had a positive interface with the external spaces and garden.

The sleeping quarters are accommodated in the upper floor, allowing for some privacy and separation of potentially conflicting functions and uses. The main bedroom is located on the street edge, and has an external terrace which will provide relief from the tight internal spaces.

The children’s sleeping area is located toward the garden, providing four sleeping opportunities on double bunk beds. This design has resulted in a 54m2 house, which exceeds the 40m2 limitation. It is however a great achievement that despite the extra 14m2 provided, the costs of the house remained within the accepted cost limits.

One of the key considerations for the design, was that this would be a starter home, which could be developed as the family is able to afford it. The external upper terrace is the first opportunity for the extension to be realised. And on the ground floor, the house is positioned to allow for growth towards the back garden and yet still allow adequate space, including play space for the children within the safety of a private garden.
The materials
The main consideration for a cost effective solution was to reduce the cost of building materials; reduce the building time and consider involvement of the community in the building process. After MMA research, and consultations with a structural Engineer, Henry Herring (Axis/AKi Engineers) and a Quantity Surveyor, Brian Mahachi (BTKM) the Ecobeam system was found to be the appropriate response for the MMA objectives for the 10x10 house. This structural system, developed by Eco-Build Technologies in Cape Town, consists of a timber structural frame combined with a sand-bag construction as infill for the walls of the building. The timber beams have metal inlays to provide tensile strength and thus improving the structural integrity of the system. The sand bags provide excellent thermal mass qualities for passive thermal control. One of the many qualities of this type of building technology is that the “Ecobeam System” exhibits tremendous thermal stability, tapping into the indigenous building techniques that made the traditional buildings thermally sound and comfortable to live in. Anybody who has lived in a mud and wattle rondavel, or old stone houses will know this effect. The occupants will be kept cool in summer and warm in winter. The system also has excellent sound absorbing properties which help to provide a measure of privacy in close quarter living. The “Ecobeam System” with sand bag infill is much heavier than brick construction and is therefore wind resistant. The “Ecobeam System” resists water penetration due to the fact that the sand in the bags is a filter medium – any water penetrating the plaster will simply “filter” down to the damp-course and exit the wall to the outside. This unique system is suited to mass production and will provide excellent job opportunities and skills development for the local community of Freedom Park, it is locally produced, simple to construct and favour unskilled labour especially the women in the community. In terms of cost saving, no bricks lie around the site before, during or
after completion, thus eliminating "site-clearing", which is a major cost factor on any building site. The loss of building materials through wastage and theft is also reduced drastically.

The construction is primarily manual, with little or no need for electricity in both the production of the EcoBeams and in the construction process. The sandbags are plastered over in the exterior, and therefore, the only "wet" trade required is the plasterer. The plaster adheres easily to the sandbags and chicken wire that covers the walls. The Ecobags are made wet before the plastering process. The wet bags behind the plaster enable the plasterwork to "cure" instead of merely drying, as it does in standard construction. The end result is a very hard and reinforced cement finish.

In order to reduce costs for the 10x10 house, the interior walls are finished with timber boarding over the sandbags and some segments of the exterior walls are finished with timber boarding and translucent polycarbonate sheeting to maximise natural light penetration. Timber window frames areas and doors are provided by a custom made frame system developed by EcoBeam Technology.

In a nutshell, MMA and the Team were able to produce a 54m2 10x10 house for a maximum cost of R65.000 – R70.000. Although this cost exceeded the R50.000 budget, Design Indaba accepts that there is a factor of economies of scale. This factor was agreed to be approximately 15% since the costing of a 10x10 house was for a single unit.

Therefore, when compared with the production of 1000 subsidy houses by developers the economies of scale come into consideration and as such these values should be compared on that basis.

Another benefit for the Jonker family is that the R65.000 house includes EcoBeam frames which are provided for future extensions, and which can be part of the landscaping meanwhile, for plants or creepers to grow up the lattice as shown in the diagrams. It is our view that this kind of thinking needs to factored into the subsidized housing delivery process, thus promoting the concept of starter houses into which the families could grow. MMA is proud to be associated with the 10x10 initiative, and the principal Luyanda Mpahlwa would like to see this as a worthwhile contribution to the national debate on sustainable and dignified housing delivery in South Africa.
Implementation

Beneficiaries have been involved hands-on in every stage of the building process. Everyone joins in, packing sandbags for the structure.

Mrs Jonkers, compacting the sandbag wall of her house.

Women of the Freedom Park community build up the walls.

A scratch coat of plaster.

Both storeys are plastered.
The finishing touches are added to the first 10 x 10 house.

With massive construction inflation and inclement weather, the building process was a tough learning experience, but as a result also provided invaluable opportunities to refine 10 x 10 Housing’s approach.

The Jonkers family outside their new house.

Sponsorship

- Said Justin Berry, group marketing manager of 10x10 Housing’s principal materials sponsor, PG Bison: “As a leader in the South Africa’s building industry, PG Bison is proud to be part of a project that proposes a meaningful solution to the housing problem in South Africa.”

- P G Bison/Pennypinchers were the principal sponsor of materials for the project, donating R 500 000 in materials as well as R 360 000 in cash. Due to escalations in building costs, this sponsorship did not fully cover all materials required.

- Interactive Africa sponsored the labour component, and also paid all outstanding materials invoices after the P G Bison funding had been exhausted.

- Plascon provided paint for all 10 houses.

- Mellon Housing Initiative donated 10 solar water geysers.

- MMA Architects donated R 100 000, thereby ensuring that such extra features as the balconies could be built.

(please see the financial review for more precise details of allocations)
Project Management team

The houses being built by Design Indaba at Freedom Park would not be possible without the pro bono involvement of the following suppliers:

- **Client/project management**: Interactive Africa
  Rosemary Lombard & Mike Purdham

- **MMA Architects**: Principal Agents
  Luyanda Mpahlwa, Kirsty Ronne, Westley van Wyk and Chinedum Emeruem

- **AKI Structural Engineers**:
  Henry Herring and Grant Fredericks

- **Bham Tayob Khan Matunda**: Quantity Surveyors
  Brian Mahachi and Earnest Zitha

- **Bowman Gilfillan Attorneys**:
  Nadisha Singh

- **Arup**: technical advice
  Mike Edmonds
Acknowledgment is also due to Schalk van der Walt, of construction company Tech Homes, who was awarded the contract to manage construction on site, and Ecobeam, the suppliers of the wooden frames and bags we have been using. Graeham Conradie of Buildsure subcontracted to Tech Homes and oversaw a large proportion of work on site.

Generous assistance also came from NMC and the Niall Mellon Housing Initiative, particularly from Crystal West, Natasha McKrieling and Ardiela and Lee at the Freedom Park housing support centre, who kept the beneficiaries' files in order.

Without the tireless commitment of Freedom Park community leader Wayba Naidu, the 10x10 Housing project would not have been possible. Her diligent and no-nonsense approach ensured that relationships between the Freedom Park community and Design Indaba remain positive, and that everything ran as smoothly as possible on the ground - communicating concerns and needs and brokering consensus.
Greening

As part of the carbon offset for Design Indaba 2007, 500 trees were purchased for the whole community of Freedom Park from Food and Trees for Africa (FTFA). The trees were planted in February 2009, and will go a long way towards transforming the barren, sandy landscape as they grow.

FTFA is an NGO that promotes greening and food security, espousing the view that “a house is not a home without a tree”, and aims to improve the quality of life of the poor by providing plant material, environmental awareness and education for those living in low-cost housing developments. Growing trees and other plants in the townships brightens the environment, prevents soil erosion, and provides wind breaks, as well as food, income and activities for many unemployed people. FTFA spreads awareness about the importance of greening, and trains volunteers to become community-based educators on greening the environment themselves. They share their knowledge with neighbours, and soon the entire community is involved in the business of gardening.

FTFA programme manager, Joanne Rolt, and community forester, Lucky Xaba, were responsible for organising roll-out. Workshops were held with 12 members of the Freedom Park community, training them in planting and caring for trees - knowledge that they in turn would pass on to their neighbours.

The following indigenous species, all suitable for the climate and soil conditions in the area, and notable for their hardiness and capacity to provide shade, were planted at Freedom Park:

- 60 x *Ilex mitis* (African Holly/Without)
- 60 x *Harpephyllum caffrum* (Wild Plum)
- 15 x *Podacarpus falcatus* (Outeniqua)
- 60 x *Sideroxylon inerme* (White Milkwood)
Yellowwood)
60 x *Ficus natalensis* (Natal Fig)

80 x *Trichilia dregeana* (Cape Mahogany/Rooi Essenhout)

60 x *Combretum erythrophyllum* (River Bushwillow)

20 x *Rapanea melanphloeos* (Cape Beech/Boekenhout)

50 x *Rhus pendulina/Searsia pendulina* (White Karee)

15 x *Ekebergia capensis* (Cape Ash)
Awards & Recognition

• **Winner, Curry Stone International Design Prize 2008**
  In September 2008, MMA Architects were awarded the inaugural Curry Stone Design Prize for their Design Indaba 10x10 house. This annual international prize recognizes breakthrough design solutions with the power and potential to improve our lives and the world we live in.
  “MMA’s ideas are exactly the kind that the Curry Stone Design Prize hopes to promote and encourage in the broader field of design – because now, more than ever, the world needs them,” said David Mohney, prize secretary and Curry Stone Chair in Design at the University of Kentucky.

• **Winner, Elle Decoration International Design Award 2009: Architecture Category**

• **Shortlisted, Brit Insurance Design Awards**
  Last year, the winning projects were a testament to the inspiring diversity that design as a whole represents and the shortlist this year is no less impressive... Across the categories, there is this year a sense of climates in flux, be it cultural, political, economic or environmental, where the design output expresses this through both subtle and more explicit processes and applications. But despite the current financial down turn that is all too real, the design stories in this exhibition and award demonstrate that there is still a great sense of optimism as well as the power of using design processes as a tool to drive ideas forward - whether they are for commercial or more experimental purposes.”

• Currently on display at the Design Museum in London as part of the Brit Insurance Designs of the Year exhibition. The exhibition catalogue’s entry for the Design Indaba 10x10 Housing Project:

  A comment from the exhibition website:

  "This is an outstandingly appropriate piece of design. It is changing lives not just in providing shelter, but building community and family pride for people who have had a rough time of it to date. Would that more designs were as thoughtful and well-executed."

• **Nominee, Index: Award 2009**

• **Selected to participate in the Rotterdam Biennale 2009**

Projects qualify by being:
- economically sustainable, e.g. by creating jobs and supporting social business.
- ecologically and energetically sustainable, e.g. by reducing
waste or energy and material consumption.
- socially sustainable, e.g. by creating education facilities and enabling communities to become self-reliant.

**Selected Press**

Leveraged initially off the well-established prestige of the Design Indaba brand, but quickly self-sustaining, there has been immense international attention - from radio, television, print and online media - focused on the 10x10 Housing Project, and the potential of the designs generated for implementation in South Africa and comparable contexts further afield.

Marcus Fairs, editor-in-chief of design blog DEZEEN and ex- founding editor of Icon magazine, included the Design Indaba 10x10 Low Cost Housing Project in his book, Green Design, published by Carlton Books. According to the book's blurb:

“From vast architectural projects to modest one-off pieces of salvaged furniture, "Green Design" shows how the design world is responding to the environmental challenges of the twenty-first century. Emerging trends in green design are covered, such as recycling and ethical sourcing. Also considered is the parallel issue of social sustainability, where the welfare of factory workers is given equal importance to environmental issues, and the idea of Cradle to Cradle enterprises, where a product can be reused over several product histories or unending 'loops'. By showcasing existing green innovations as well as visionary projects that will be built in the coming years, including the world's first zero-carbon city, "Green Design" paints a future where technology and ethics merge.”
Evaluation

As Phase 1 of 10x10 Housing concludes, it is important to reflect on what has been learned during the implementation - what would we do/not do again? Why or why not?

The overarching aim of the Design Indaba 10x10 Housing Project is to contribute to the debate on low-cost housing, and our commitment is thus to make all information regarding our experiments and costs transparently available. We hope that the lessons learned, and the “school fees” we have paid on this project, will be of assistance to others who wish to embark on innovative initiatives in the low-cost housing sector, something which we firmly believe is necessary to improve the standard of the government-subsidised homes provided to people at present. Our intention in sharing this information, warts and all, is to work towards this outcome.

Reflection on the process

Due to the unconventional materials used, and the difficulties we experienced in working with the material supplier, Ecobeam, who had undertaken to supervise the use of their system on site, but whose assistance was lacking to a satisfactory degree at any stage of the project, the first house was only completed in August 2008, hampered also by the rainy season and theft of materials including the electrical conduit piping from out of the walls. As a result of the complications and interruptions experienced during House 1’s construction, on completion we did not have an accurate measurement of how long the house would have taken to build without these hold-ups.

Because Ecobeam’s assistance was not forthcoming, we got an independent contractor on board to finish the first house. This contractor, who was recommended to us as experienced in working in a social housing context, but had no prior experience in using the Ecobeam system, went on to build House 2. The contractor
was confident after discussions with the Ecobeam proprietor that he would be capable of doing so without much trouble. Ecobeam renewed their promise of technical support when necessary. We thus decided that we would allow the contractor to use the second house as a yardstick to determine cost-effective methods for streamlining production, and then build Houses 3 – 10 in a simultaneous “blitz”, based on lessons learned, timescales and costings derived from this measurement exercise.

House 2, however, was taking far too long to complete, the meter was running way over budget and labour and security costs continued to pile up as the days went by, with very slow progress on the ground. Above all, we were conscious that our beneficiaries were still waiting for their houses. So, with House 2 only at plaster scratch coat level by November 2008, we decided that we could no longer delay the commencement of building Houses 3 to 10.

We were unconvinced of the capacity of the present contractor to complete the remaining houses satisfactorily, and explored options of using other contractors. We approached Ecobeam to assist in sourcing a contractor skilled in the use of their system, because the current contractor’s inexperience had been the main source of delay. There are only a few contractors experienced in the use of the Ecobeam system, and no one was available with bandwidth or will to assist the project with the limited funds we had to offer. We therefore decided that continuing with the present contractor would be the most sensible option, considering that we had paid his “school fees” on House 2, and he expressed confidence that he was now au fait with the system. He employed a subcontractor to assist with the personnel required for the workflow of building 8 houses simultaneously, the project was scheduled and costed, and a contract for Houses 3 to 10 was signed in November 2008. The contractor provided us with a fixed quote for labour on Houses 3 to 10 that was duly signed off as part of this contract.

The practical completion date in terms of this contract was set at 16 February 2009.

Work then progressed at a satisfactory pace, and within 12 weeks, notwithstanding delays in the supply of beams and bags by Ecobeam, and the very poor quality of some of the beams supplied (which required remedial work by the contractor before they were usable), all the houses were up to roof height.

Then, things started slowing down again. From the beginning of the contract, the contractor had been paid on the basis of deliverables achieved each week, rather than related to time. This was intended to provide the impetus to complete the work quickly. Every Thursday, the project management team, consisting of the architects, structural engineer, QS and client (Design Indaba) met on site to inspect the work carried out. The QS issued assessments and payment certificates accordingly.

When progress was slow, the result would be that payment that week might be very low, regardless of the number of personnel on site. This meant that the contractor and subcontractor were paying their workers more for labour than they were being remunerated by IA. Inefficiency was starting to cost them dearly, and we were once again behind schedule.

By February 2009, the materials sponsorship by P G Bison/Pennypinchers was exhausted. Due largely to construction inflation in the current economic climate and preceding the 2010 FIFA world cup, the R500 000 materials sponsorship (granted in 2007) was insufficient to complete the houses. Design Indaba approached the sponsors for additional funding, but we were denied.
The contractor then issued us with a materials list for everything still required to complete the houses. This list was vetted by the QS, and Interactive Africa undertook to pay for all material on the list as and when required, seeking additional sponsorship concurrently, but not waiting until it had been secured, in the interests of expediting completion of the project. IA agreed to buy all the material upfront if necessary. However, not all the requisite material was ordered by the contractor immediately.

MMA Architects agreed to donate R 100 000 to the project too. They asked that the balconies that had been cut from the plan due to financial constraints be reinstated.

A few weeks later, the subcontractor left the site, claiming that the contractor had not been paying him sufficient amounts to recoup his labour costs, and citing frustration with delays in material supply which had escalated labour costs further due to downtime (something that should not have been a problem had the contractor managed orders better because the money to pay for materials was available). Basically, it appeared that once again there had not been tight enough supervision of rollout by the contractor.

For the past 3 weeks there has been almost no activity on site, as the project team have been wrangling with the contractor and subcontractor to get them back on site. In essence, the contractor and subcontractor continue to be committed to completing the project, but due to mismanagement of costs and inefficiency of supervision, they require more money to complete the project. This Design Indaba made a concession for, given the urgency of providing the remaining 8 beneficiaries with completed houses as winter approached. We were also lenient because we acknowledged that the project was an experimental, prototypical one for all parties involved: it had NOT been straightforward.

The project team agreed on an addendum to the original contract, with a detailed schedule addressing what had been identified as problem areas, and very stringent penalties for non-delivery. By the following week, with the additional injection of funds, things were back up and running on site. Apart from several instances of theft, the houses progressed to completion with few hitches by the end of June.
Gallery
Photographs speak louder than words in describing the impact that the 10x10 project has had on families at Freedom Park.

Hans and Olga Jonkers with four of their six children in their new home.

The Jonkers kids with their friends in the backyard of their Design Indaba 10x10 house, designed purposefully to give them a safe space to play. They no longer have to hang out in the street. This is an example of how adding the element of design, generally missing from the context of social housing, makes a tangible difference in people's lives.
Lessons Learned & Recommendations

- Economies of scale are vital to make such a project viable to the low cost housing market. The costs per unit can be reduced considerably when rolled out in large numbers on an “assembly line”. Due to Ecobeam’s limited manpower and factory capacity at this juncture, supply and delivery was less than satisfactory. The level of supervision and skills-transfer required for cost-effective roll-out of the system was also not forthcoming, and construction costs per square meter were thus de facto far higher than those quoted us at the outset. We are confident that with tighter management and greater factory capacity, the potential for Ecobeam to be a practical and cost-effective solution in a social housing/PHP building context is definitely better than demonstrated on this project.

- Community involvement: One of the factors that contributed to the initial costing of the MMA design being so favourable was that the assumption existed that beneficiaries would provide “sweat equity”. However, what became clear is that payment of all people involved, even those building their own houses, is necessary in a context where employment and income generating activities are scarce, and no subsistence activities are possible which do not require money (in a rural context, where people could grow their own food, this might conceivably be different). Something else that became clear was that, even after skills transfer has taken place, constant supervision by someone with experience and expertise in the building method is required to ensure productivity and minimise the error margin.

- More research is needed for projects involving experimental technologies compared to more conventional ones – and budget specifically for this should be allocated. Prototypes cost more to develop: there is a need for several rounds of costings and also for consultation with technical experts and stakeholders. More lead time due to the certification and consultation process required for unorthodox methodologies or materials is thus also necessary. There is scepticism to overcome, both from bureaucrats and from beneficiaries, who have entrenched
ideas of what constitutes a “proper” house – these ideas and concerns need to be explored and addressed consultatively.

- Local and Provincial Government Departments’ turnaround time can stretch the lead time and implementation of such a project considerably, and contingencies for delays on account of bureaucracy should be built into the project plan.

- Security issues in townships such as Freedom Park are an intractable problem to be dealt with on an ongoing basis: employing people from within the community to police the houses worked moderately well. The speed at which a house is completed should be as rapid as possible – the less time it is left unattended, the fewer opportunities there are for theft. Consideration should be given to when the best time for installing items attractive to thieves would be, and to methods of fit out that best suit this. For example, using internal

- Cost of finishes – plaster cost could be reduced if the natural waviness of a wall made out of sandbags was embraced and featured. MMA’s design required a smooth, square finish, which in practice required significantly more plaster to achieve than the thickness which Mike Tremeer of Ecobeam had said was necessary. This increase in plaster required over the original amount calculated during costing was one of the critical reasons for the houses exceeding their budget, both in terms of extra materials and extra skilled labour time required.
Conclusion

The Design Indaba 10x10 Projects were launched to encourage South African creativity to go global. By pairing international leaders in design with local practitioners, the 10x10 Housing Project aims to generate ideas that have social relevance locally and also appeal to an international market. The 10x10 Low-Cost Housing Project’s experimental focus is intended to stimulate debate around alternatives to conventional social housing typologies. All designs are open-source and are available on request. The overarching goal is to explore and help generate sustainable and dignified housing solutions applicable anywhere in the world where similar needs in terms of low-cost urban accommodation exist.

Contact details for further information

For further information, please visit the Design Indaba 10x10 Low Cost Housing Project online:

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Appendices

- All teams’ designs
- Press
All teams’ designs

Luyanda Mpahlwa (Cape Town) assisted by Kirsty Ronné

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Vanessa September (Cape Town)
Lindy Roy (New York)

Jo Noero
(Cape Town)

Cameron Sinclair
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Don Albert (Cape Town)  
Tom Dixon (London)

David Adjaye  
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Martin Kruger  
(Cape Town)
Stefan Antoni
assisted by
Mark Bullivant
(Cape Town)

Eva Jiricna
(London)

Will Alsop (London)
Architects have low-cost housing in the bag

IT IS 10 a.m on a Sunday in Freedom Park in Hillbrow, the home of 3 on 10 Housing project. People are walking with a purpose around the street while others sit on the infamous Cape Towans and sell flags with a smile.

The sandbags will be used in Hillbrow and Olga Joad's new home as part of Design Indaba's 10 x 10 Housing Project. Launching last year, the project challenges 10 architectural teams to provide innovative and dynamic design solutions for the low-cost housing sector.

Each team consists of a South African and foreign architect working together to create 10 distinct designs that will change the perception that low-cost housing is outside the realm of design innovation and architectural significance.

As well as the 10 homes, the challenge will create a "user's manual", which will be presented to the housing minister and provide compressed version prototypes for the homes. A jury will select the top three and the team will design, build, and present a house of at least 30m² within a budget of R30 000, to fall within the parameters of a current Reconstruction and Development Programme (RDP) home.

Because of the 30% inflation in the local building industry over the duration of the project, however, an increase in the budget was allocated.

The development will bring new materials and concepts to low-cost housing, and will be an important lesson to poor families across Africa," says Kavi Naidoo, founder of Design Indaba and director of Interactive Africa.

The first selection to be approved was the entry from architects Layladda Muizibwa and Kirsty Rossouw of MMA Architects. Using a building system called Kebebana, most of the house was erected in two days. The split-level home is cheaper than a brick and mortar one but equal, if not superior, inequality, says Muizibwa.

Sandbags, instead of bricks, are used within a metal frame. The house still complies with the rules and regulations of the Cape Town City Council. This within budget and builds all the components with regards to framing and certification of an alternative building system.

"The most important aspect of the Kebebana is that it is a very large scale, it is a discipline in making a significant contribution towards innovation, simplified solutions to the housing situation," Muizibwa says. "I'm looking forward to seeing the final construction.

The design also offers a number of improvements on the standard RDP house. Muizibwa increased the size and created a fluid interplay between public and private spaces in and around the house. It is also built on a framework that makes it easy to expand and involves the whole community in its construction.

These homes are an often-ignored context where people could still interact with the street and neighbours while sitting on their stoop. The house can grow incrementally as the family grows."

Perhaps the hardest part was convincing the would-be occupants that a house made from sandbags could withstand an earthquake, fire and the fierce Cape wind. "The quality of the walls is superior; damp will not be a problem as moisture will seep. It also will not crack," Muizibwa says. "An advantage of the project is that anyone can fill a sandbag, so the community can get involved. There is no need to transport bricks across the country — about 4,000 flat-packed 30-litre sandbags will fit in the boot of a small car."

The 10 homes should be completed by the end of the month. In a country where many live without a roof, the Kebebana house may mean that the dreams of the occupants will have a warm, dry winter.
10 X 10 HOUSING PROJECT

The objective: Develop a housing project for ten families in a rural area of South Africa, where the traditional huts are replaced by modern, affordable steel-frame houses. The design concept includes the use of local materials and labor, ensuring sustainability and community involvement. The project aims to improve living conditions and enhance the quality of life for the families involved.
I’ve seen many boring design conferences, where star designers talk in main tones about products and stories that everyone has already heard about. Perhaps conference goers are satisfied with the chance to meet some famous people, but one wonders if it’s really OK to change admission fees for that kind of thing. In stark contrast, is Design Indaba, an international design conference held in Cape Town, South Africa. Although we introduced the event two times within a two-year period—in AX12 vol. 121 and vol. 123—the event line-up was extremely diverse, as suggested by event organizer Bidu Naidoo of interactive Africa’s statement that “speakers were selected with great prudence” and the constant was packed with entertainment value and social relevance. Here’s a look at Design Indaba, which ran from February 27 to 29.
South African architect Luyanda Mphahla has devised an ingenious low-cost home to tackle the housing crisis in Cape Town’s townships. Sean O’Toole meets a professional who is taking issue with the urban planning scene.
Why design?

The Design Indaba includes fashion and fashionable buzz about how communities design around economic and environmental realities.

Matthew Etra and Andy Davis

It is with great pleasure that the organizers of the Design Indaba 2005 announced on 27 February that this year’s event will be extended to four days, running from 9 to 12 March. This means that the Design Indaba will take place on International Women’s Day, creating a special opportunity to celebrate women in design.

As usual, the program will feature a diverse range of speakers, from designers who are leading the way in sustainable design and innovation to prominent architects and designers who are pushing the boundaries of what is possible.

Among the highlights of the event will be the keynote address by architect and designer Zaha Hadid, who will discuss her work on the new Museum of Islamic Art in Doha, Qatar. In addition, the Design Indaba will feature an international forum on the future of design education, with panel discussions led by some of the world’s leading design educators.

The Design Indaba is a testament to the power of design to shape the world around us, and it is an event not to be missed by anyone who is interested in the future of design and the role it plays in shaping our world.

More information can be found at www.designindaba.com.
Ten architectural teams, composed of handpicked South Africans paired with international alumni of previous Design Indaba Conferences, were challenged to provide dynamic design solutions for the low-cost housing sector on a completely pro bono basis. The objective was to come up with affordable, attractive, innovative responses to the urgent need for housing for the urban poor. Sustainable design, construction and operation principles were essential criteria.

The first qualifying solution to the project’s challenge was the design by Luyanda Mpahane, of MMA Architects, for a single-family home, which leveraged the extremely tight budget by borrowing elements from indigenous mud-and-wattle building techniques. Forgoing traditional brick-and-mortar foundations in favour of a two-storey frame of timber and sandbag infill construction, the house is both energy-efficient and requires little to no electricity or skilled labour to construct. In September 2008, the design won the international Curry Stone Design Prize, an award recognising breakthrough design solutions with the power and potential to improve our lives and the world we live in.

Design Indaba is currently overseeing the completion of 10 such houses in Freedom Park, a township in the Cape Town metropolis. Beneficiaries were workshoped during the design phase to determine their needs and preferences, and have been involved hands-on in every stage of the building process. The project has provided local people, mostly women, with employment as well as experience in working with a sustainable building system.

Experiences and outputs will be compiled and presented to the Minister of Housing in an open source manual. The information will also be made available online, thus contributing to the global commons of knowledge regarding design and construction of low-cost housing.

Find out more about the Design Indaba 10x10 Low-Cost Housing Project online at www.designindaba.com/10x10/ or Blog: designindaba10x10.blogspot.com/