

Dirt

NEWSLETTER OF EARTH BUILDING ASSOCIATION OF AUSTRALIA Inc

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Dirt

Dirt is the quarterly Newsletter of EBAA.

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The contents do not necessarily reflect the opinions of the Executive.

Please feel free to contribute.

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Mudmap

By Peter Hickson
President

Challenges for Earth Building

The challenges faced by the Earth Building industry are parallel to those faced by the Australian industry as a whole. We are not being singled out as some may feel; we are part of the problem and need to be part of the solution. Unfortunately we have less in the way of resources to invest work in research to prove our case or to press for inclusion in legislated solutions. And we have less power when it comes to participating in the process.

Some of the problems Australia's building industry faces are rebuilding safer homes and communities after the bushfires, lowering the enormous carbon footprint involved with continuously building, rebuilding, maintaining and operating buildings and providing appropriate affordable housing for Australians especially indigenous communities. These challenges provide immense opportunities for our industry.

We need to be strong, unified, a reasonable size, committed and linked in partnership with research institutions. We need to continually

improve the way we design and build, we need permission to do so and we need to make it easy for others to do so soundly and efficiently.

EBAA membership has grown recently to previous high levels and is set to eclipse those figures in the coming year. EBAA is linked to research in a growing list of Universities. EBAA has lobbied and made submissions to NSW, Victorian, WA and federal governments to date with various degrees of success and a letter to the Federal Government awaits a new government to be formed. We wish to be fully involved in the process of finding solutions and making a positive change.

Conference Program

The conference program for this year is included along with bios of those presenting. It is comprehensive and strong and covers the afore-mentioned topics challenging our industry. We present a mixture of highly qualified well-respected academics, innovative professionals, representatives of organizations making a change through unorthodox methods, and EBAA members expert in their field. The special treat at our conference dinner at Monsalvat is a popular radio presenter, journalist, newsheet columnist and writer

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Richard Glover. Richard recently launched “The Mud House” that is an amusing and entertaining account of building a muddie over many years (well still unfinished) with his partner and an old university friend and partner. A copy of Richard’s book is freely available to all delegates. Richard promises us an entertaining after dinner talk.

Once again those attending will be provided with a Certificate of Attendance that may attract CPD points in your home state. We are hoping to attract larger numbers this year and have recently extended the time for earlybird rates and have introduced a special price for students and employees and partners attending with EBAA full fee paying members. Sound attendance figures guarantee more quality conferences in the future and rewards

those presenting and organising the event. It also ensures EBAA covers conference expenses and has the funds needed to maintain and expand the services offered to members and earth building in general.

EBAA Committee/AGM

The AGM will be held after the Friday conference proceedings. We welcome EBAA members attending to contribute ideas to a brain storming session and ask members to please consider offering time to serve EBAA within the committee or in any way next year.

EBAA 2010 Earth Building Conference

17 - 19th September 2010

Eltham Community and Reception Centre

801 Main Road, Eltham 3095

Thermal Mass vs Insulation.

Bush Fire Bunkers and Fire Resistant House Designs using Earth.

Carbon Pollution and the Role of the Built Environment in Addressing Climate Change.

Affordable Housing using Earth Building Techniques.

Appropriate Climate Responsive Design with Earth.

Earth Workshops.



EBAA Conference 2010 Master of Ceremonies



Professor Allan Rodger

The Patron of The Earth Building Association of Australia

Allan Rodger is Professor Emeritus, The University of Melbourne. From 1974 to 1996 he was Professor of Architecture in the Faculty of Architecture, Building and Planning of the University of Melbourne.

He has pioneered two major interrelated issues: Self-Help Housing and Sustainable Settlement, co-convened three (local, national and international) conferences on Self-Help Housing and Earth Architecture, operated the Greenhouse Effect Programme of the International Union of Architects (UIA), established the Sustainable Development of the Built Environment: Road from Rio programme for the UIA, advised the American Institute of Architects (AIA) and drafted the Chicago Declaration of Interdependence for a Sustainable Future - the environmental manifesto of the architecture profession worldwide. He formed and led the winning team in the National Ideas Competition for Ecologically Sustainable Urban Development.

Consultancies on sustainability have been undertaken for leading universities, the United Nations, OECD and a number of Australia's state and territory governments.

Allan is currently Chairman of the Board of the Habitat Trust. He was previously a Member of the Board of Banksia Environmental Foundation, Chairman of the Australian Club of Rome, and Foundation Board Member of the CERES project and Greenhouse Action Australia.



Ray Trappel

Ray is an Architect and Builder operating in the Blue Mountains area of Sydney. With his wife Lynne (also a qualified Architect) and various staff members they have designed and built a large number of buildings in the medium of unfired earth, especially puddled mud brick. Ray often mentions one local school project where he made the mud bricks for the project on site from intercepted clay fill that otherwise would have been carted some distance away to a landfill site, as waste. This counted as the lowest possible embodied energy of a wall building material, the appropriately named "negative embodied energy". Ray lives in a mud brick house and for many years has been widely promoting the greater use of unfired earth.

Ray is a past president of the Earth Building Association of Australia and is currently serving as a Vice President of EBAA. Ray consistently provides much of the significant effort to produce the EBAA newsletter "Dirt", and was recently responsible for leading the development of Dirt into an electronic format, the so called "eDirt" thereby allowing much more widespread dissemination of the EBAA message.

www.trappelarchitects.com.au

EBAA Conference 2010 Speakers



Terry Williamson

In 2009 Terry was awarded the IBPSA Award for Distinguished Service to Building Simulation. This IBPSA award recognizes an individual who has a distinguished record of contributions to the field of building performance simulation, over a long period.

Terry was educated in engineering and architecture in Australia and is Associate Professor of the School of Architecture, Landscape Architecture and Urban Design at Adelaide University, Australia. He has taught, researched and published in areas of energy, thermal performance and sustainability related to the built environment. Terry is the author (or co-author) of over one hundred publications including books, journal articles and conference papers. He is currently Associate Dean (Information Technology) of the Faculty of Professions.



Geoffrey London

Geoffrey London is the Victorian Government Architect. He is also the Professor of Architecture at The University of Western Australia and has held the position of Professorial Fellow at The University of Melbourne. He was, for a period of nearly five years, the inaugural Government Architect in Western Australia. He is a past Dean and Head of School at UWA, past Chair of the Committee of Heads of Architecture Schools of Australasia, a past President of the Western Australian Chapter of the Australian Institute of Architects, and a Life Fellow of the Institute.

He is currently a member of the Australian Research Council's College of Experts and has acted as a consultant on numerous architectural and urban design projects.

He has served on and acted as Chair of many architectural design award juries and a large number of competition juries.



Richard Glover

'Four friends, one block of land, no power tools'. "Imagine this - with mudbrick you have a building that is made out of the very earth it stands on ... There is another thing: the stuff is free. Once we buy the land we'll have no money left. This way we can get started as soon as we have the block."

Richard Glover is an Australian journalist, author and talk radio personality. He has been with ABC Radio Sydney since January 1996, before which he worked for 12 years as a print journalist at the Sydney Morning Herald, including stints as that paper's News Editor, Arts Editor and European Correspondent. He has worked variously as an actor, newspaper journalist, waiter, lift driver and scriptwriter and has a weekly Sydney Morning Herald column. Richard's most recent book is *"The Mud House"*.

EBAA Conference 2010 Speakers, continued



Garry Baverstock AM

Garry will focus on the role of the built environment in reducing carbon pollution and what needs to be done if we are going to solve Climate Change.

For over 30 years Garry Baverstock has been designing, building educating and researching in the field of ESD. Winning 8 WA Home of the Year Awards, a MBA Award, 2 James Hardie Awards in the 1990's, a Green-smart and two Awards of Merit from the Royal Australian Institute of Architects (RAIA) as well as numerous design competition successes in the housing design area. This has seen Garry become one of the important leaders in the field in Australia. Recent projects such as the Millennium Home (2000), the Eagle Bay Beach House (2003) and the Eco-Compound in Cottesloe (2004) demonstrate the transfer of this long experience into contemporary 21st century residential architecture.



Linda Dvorak

“When rammed earth is combined with a living roof – assessed, under the same three criteria with clay-tiled, concrete-tiled, and steel roofing – my study concluded that the optimal designs for houses in bushland will feature earth all round.”

Linda is a highly-motivated task-driven Engineer with significant Design and Manufacturing skills. Her background includes expertise as a Senior Program Analyst combined with over two years experience on various Sustainability projects. She has a Bachelor of Engineering, Mechanical and Manufacturing (Manufacturing major) University of Melbourne, and has recently been awarded a Master of Engineering, Sustainable Energy, RMIT, with first class honours.

As a Sustainability Engineer, Linda has been responsible for various sustainability projects in the areas of carbon footprint reduction; energy auditing; energy efficiency; designing sustainable housing, cities and vehicles; and performing Life Cycle Assessments. Her list of clients includes the Victorian Government, Ford Motor Company of Australia, RMIT, University of Melbourne, and University of NSW.

Currently a resident in Eltham, Victoria, and mother to very young children, Linda plans one day to build a bushfire-resistant, non-toxic, and environmentally sustainable home for her family to live in a bush environment.



John Moffin

John is currently a Director and General Manager of the Jack Thompson Foundation Ltd.

John owned and operated a trucking company in Sydney in the 1980's. He moved onto working in the logging industry near Wauchope, NSW. In the 90's John owned and operated a landscape supplies and commercial wholesale potting mix business in the Mid North Coast, NSW. He also supplied building materials to Owner builders

in the region. Gaining knowledge of milling techniques and building practices.

He attended the Garma festival in 2007 and was moved by the stories he heard of overcrowded homes and the ensuing social problems. Through his knowledge of timber milling and building, he realized how the timber growing in the area could be used to solve the chronic housing shortage in Arnhem Land. People living 'on country' could be taught to build their own houses out of the 'living ground'.

He approached Jack Thompson, for his support and Jack fully seeing the potential of the idea offered his backing and the Jack Thompson Foundation was born.

John lived in Northeast Arnhem Land for 9 months in 2008, working with the Yolngu people, teaching logging and milling techniques and facilitating instruction on how to build their own homes, it was a resounding success; this constituted the Jack Thompson Foundation pilot project.

Since then the Foundation has been spearheaded by John's continued voluntary commitment. John has become a keynote speaker at conferences in the area of Indigenous issues and has gained respect in remote communities throughout Australia as an advocate and champion of Indigenous issues.

John Mofflin is an ordinary bloke with an extraordinary vision.

<http://www.jackthompsonfoundation.com/>



Rob Hadden

Rob Hadden is a serially obsessed builder and probably should feature in 'Psychiatric Weekly' as a case study. He began building in 1982 and hasn't stopped to draw breath since. Going where angels fear to tread and always pushing his limits produces some odd buildings. Some would say that is very apt! The original source of inspiration can be traced back to Montsalvat where as young art student in 1969, he was inspired by the use of mud, timber, stone and lime. This combined with the love of the English timber framing tradition has seen his work grow in complexity and experimentation.

As a largely self taught framer working alone he gets to construct buildings that many folk in commercial operation can only dream about. He likes to incorporate many organic shapes inherent in the salvaged trees that he uses. Combined with thick mud walls and/or wattle and daub, the large timbers dominate the interiors (and exteriors as well) creating a style that owes nothing to the present day. Pushing sustainable building methods to their limit, he produces houses with the lowest (and he can go lower) embodied energy imaginable. His buildings incorporate so much *embodied knowledge* as well that enables his constructions to be repaired/replaced indefinitely. We have to regain that knowledge again so that we can maintain our buildings well into the future. The no maintenance house is a myth and the amount of energy used to create many 'sustainable, eco-friendly, environmental' products still has to be accounted for.

EBAA Conference 2010 Speakers, continued



Veronica Soebarto

Veronica received a PhD in Architecture in 1996 and Master of Architecture in 1992, both from Texas A&M University, College Station, Texas, and a Bachelor of Architectural Engineering from the University of Indonesia. Prior to joining The University of Adelaide in 1998, she was a Post Doctoral Research Associate at Texas A&M University, a lecturer at The University of Indonesia and a practicing architect in an architecture firm in Jakarta, Indonesia.

Her main research areas include building thermal/energy simulation and thermal and environmental assessments of buildings. She was a Co-Chief Investigator of an ARC-Discovery-funded research project (2002-2005), a member of the International Energy Agency Task 28: Solar Sustainable Housing (2000-2005), and a partner investigator of UNSW in an Australian Housing and Urban Research Institute (AHURI) research project in 2003. She is a member of Advisory Editorial Board of Building and Environment (The International Journal of Building Science and its Applications) and Journal of Building Performance Simulation. She is the Immediate Past President of the International Building Performance Simulation Association (IBPSA) Australasia and Board member of IBPSA World.



Peter Hickson

Peter is a designer and builder of unfired earth homes. Peter also consults and trains people in the design and construction of earthen buildings and other environmental buildings.

As the current present President of EBAA he has helped to raise the awareness surrounding unfired earthbuilding in Australia.

Peter has a wide knowledge of earth building and has built a model low cost 2 storey earth building using the cob technique in the Phillipines. This building has been tested on a the University of Technology of Sydney's earthquake testing facility (shake table) with outstandingly successful results. Peter is keen to see such techniques freely spread throughout the world for the benefit of humankind. He has also overseen and built remote area housing and other buildings for Aboriginal communities within Australia.

EBAA has been raising the profile of unfired earth building throughout Australia significantly, due to the efforts of Peter as President. The major EBAA submission to the Federal Government suggesting changes to the Building Code of Australia, and particularly thermal changes needed (reported in the EBAA newsletter Dirt) was almost from the sole effort of Peter.

A volunteer aEBAA delegation to Western Australia of Peter, Ray and Steve spent a week discussing ways to ensure easier approval of thermal mass walls, particularly rammed earth walls.

He is currently highly engaged and focussed on getting easier approvals for unfired earth buildings through the Building Code of Australia. Particularly so from a thermal perspective wherein Peter firmly believes that the factual desirable thermal properties of unfired earth high thermal mass walls are not given sufficient credit.



Anthony Pease

Structural and Technical Aspects of Earth Building

Anthony has been designing houses since he was 6 years old, however it was not until 1978 that one was actually built. This was after a lot of experience in the making and laying of mud bricks and pressed earth bricks as well as the experience of building some houses. For a few years he was seen fairly regularly in the Architecture Department at RMIT.

Anthony strives to resolve all building details for a particular design so that there is not too much “head scratching” for the builder. The houses are described as Passive Solar because they are designed to make the most of the local climate and the building itself, for thermal comfort with less use of mechanical heating or cooling.



Angel Benson

Passive Solar Design, Bushfires and Earth Building

Angel is an Architect from Mexico now working in Australia, focusing on the creation concerned with social and environmental responsibility.

He has a Bachelor Degree in Architecture and Major in Urban Design, by the University of Baja California, in Mexico.

He is currently working in Australia for PEASE & BENSON, passive solar architectural design, designing residences to build in bush fire prone areas.



Daryl Taylor

Daryl has recently returned from participating in a Disaster Rebuilding Study Tour of the USA, he will present with photographs, principles and plans collected on his inspiring trip.

Daryl is director of integralevolution - a personal, team, organisational and community development coaching consultancy. He and his partner Lucy and daughter Maggie, have their home in Kinglake Victoria, and survived the Black Saturday firestorm.

While away, he visited the Green Building Centre in New Orleans run by Green Cross US, further to his work with Green Cross Australia in fire-impacted areas.

Daryl visited the remarkable 1,100 year old Pueblo - Native American adobe settlement at Taos in New Mexico, a site testament to the resilience of earth building. The neighbourhood character of the city of Taos is dominated by adobe buildings, displaying in our time the respect, amenity and marketability of this traditional architecture and slow building approach.

While in Taos, he visited Michael Reynold's brand new Phoenix Earthship and Biotechture Centre and village now with 90 completed Earthships. Michael and his Earthship team are travelling to Kinglake, Australia in February 2011 to work with 30 volunteers to build Australia's first fire-resilient Earthship in Kinglake, on Daryl's property.

EBAA Conference 2010 Speakers, continued

Daryl completed the trip visiting community action groups in and around San Francisco - including Bill McKibben re 350.org, Richard Heinberg's Post-Carbon Institute, Paul Hawken's WiserEarth, and the Californian Institute for Integral Studies - Integral Ecology unit.



Dean Farago

Dean is an Earth Render Specialist he will speak of traditional surface treatments in the Middle East and alternative options for industry, a feast of finishes, many thousands of years old, using clay, lime or Roman cement.

Dean is originally from Israel and practices in Australia using ancient techniques that are alternatives to, and in many ways superior to, Ordinary Portland Cement. Learn of plaster and casting mixes, from Biblical times, with some properties vastly superior to conventional concrete and which are cement free and which have much lower embodied energy. Fly ash is one ingredient used in some mixes and it is absent from others. Learn about his suite of ancient castable products known from history as "Charoset".



Rob Freeland

Rob is the owner and CEO of Amcer Pty Ltd. Located at 96 Mine Rd, Nutfield. This is the venue for the Sunday workshops at this EBAA Conference on 19/9/10. The property is both expansive and beautiful. Operations routinely conducted there include leading edge Research and Development into building with unfired earth together with the development and manufacture of pressed earth brick (and other) production machinery and the production and sale of pressed earth bricks, and sometimes puddled mud bricks.

Rob is a long time member of the Earth Building Association of Australia and is currently serving as an Executive Committee Member of EBAA. He has thus served for many years.

Amcer Pty Ltd, led by Rob have been manufacturing equipment for the effective production of pressed earth bricks for many years.

Additionally they have manufactured, and continue to manufacture enormous numbers of pressed earth bricks for the Australian market.

Rob personally investigated the building outcomes (fire survival rates) of various buildings and building types in the Black Saturday fires that swept parts of Victoria. These catastrophic fires only narrowly missed engulfing his own property...he was saved by a windshift, with the inferno some 8 minutes away! The Amcer report that Rob wrote of some 300 pages systematically cronicalled all building types and found fault with all except for buildings made of unfired earth. The report was submitted to the Bushfire Royal Commission. The Bushfire Code AS 3959-2009 now approves "mud brick" for building in all areas including the highest level of FZ, being the Flame Zone.

Rob is actively manufacturing earth brick presses for sale around Australia and overseas. Additionally he manufactures unstabilised

(zero cement content) pressed earth bricks for sale around Australia. Rob provides major research and input into the design and construction of bushfire resistant and non bushfire area earth brick homes and commercial buildings throughout Australia and overseas. Visit this remarkable facility on the outskirts of Melbourne as the EBAA sunday conference venue. It is truly unique in Australia.

EBAA Conference 2010 Workshops

96 Mine Rd Nutfield Vic. Sunday the 19th September.



James Henderson of Henderson Clayworks

James will take you on a voyage of discovery in clay and straw. Starting with the basics of mixing Cob, Mud Brick, Light Earth and Straw Clay, James will move into discussing thermal properties and installation methods of each. Participants' will be encouraged to make some test bricks for themselves.

Then we will move into processing and blending clay sub soils to create the different wall systems and finally move into earth render creation and application.

The three basic earth render mixes of straw-clay, sand-clay and finish render will be demonstrated.

Bring along your own sample of clay rich sub-soil for James to access and blend for you.



James Henderson is a Melbourne boy who found himself at University in Bendigo in the early 90's. An environmental bent lead to a degree in Outdoor Education. Living for five years in Bendigo fostered a love of vegetable gardens and earth buildings. Being surrounded by central Victorian muddies and being so geographically close to Permacultures co-founder David Holmgren set his path.



Western Australia Rammed Earth Technique Pictorials

Bobcat mixing of rammed earth



(left) In the foreground can be seen the two heaps to be mixed in the determined proportion. The one heap has more gravel and sand and is more yellow and the other has less gravel and more sand/ loam and is more red. 8-10% cement and just enough water is added to the mixture to obtain a well graded mixture of particle sizes as well as the colour and finish required.



(above left) The mix is picked up and tipped around 7 times to give an even mix.



(above right) An indicator of correct moisture content is when the mix starts to “stand up”.

(right) The prepared rammed earth mix is brought to the formwork with the bobcat.



Rammed earth formwork and rammers

(far left) The formwork is detailed as required in the finished wall.

(left) The pneumatic rammer used rests against the end of the formwork. The full height end stop has a key piece attached to make a better vertical junction.



Filling forms and ramming



(above from left) The prepared rammed earth material is brought right up to the 2.4m height form by the bobcat bucket... ; ... and shovelled in to the form in around a 150mm layer... ; ... which is rammed to around a 100mm layer. Peter Hickson tries his hand at the pneumatic rammer...

(below from left) ... negotiating around steel reinforcement, electrical conduit, spacers and tie rods. The quiet blue air compressor used is in the background; The loose dirt flies as it is quickly compacted into the wall; a few more passes along the edges first completes the compaction there... ; ... now to finish with a little more in the centre.



Rammed earth material and columns



(top) Peter McCartney shows Peter Hickson the characteristics of a suitable rammed earth material in his builder's yard at Margaret River.

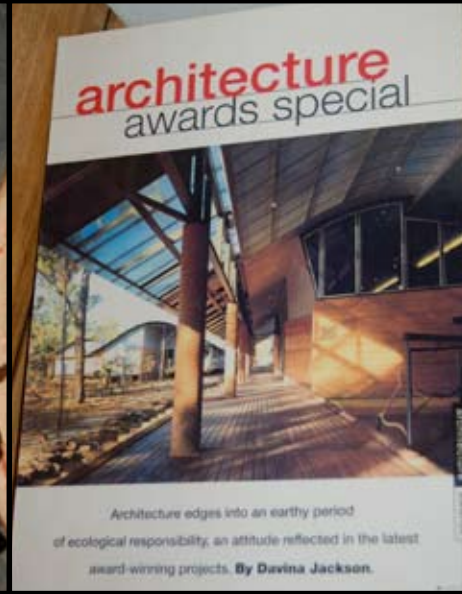
(above) Heaps of the different coloured materials used. The lighter material is a crushed limestone which is popular. The rammed earth forms are stacked in lifting frames for more efficient loading; This heap shows a gravel used in a rammed earth matrix mix.

(below) A selection of hand rammers for ramming a column.

(right) Different height and diameter column forms.



Testing and composition of rammed earth mixes



(top from left) Three differently proportioned test samples are shown. The peaks on sample 1 show the higher level of clay while sample 2 has more sand and the third sample has also more silt which gives a smoother appearance; A custom rammed earth testing mould.

(middle from left) The sandier sample mixes are better prepared using the rammed earth mould; The four samples prepared; The correct moisture content for rammed earth is shown.

(bottom from left) The rammed earth in the custom mould need to be released carefully; The spray test rig that can be used in situ on walls or on bricks. The details of this test as developed by the CSIRO are described in the EBAA book. This particular test is not required to be done by a particular testing agency but needs to be carried out in accordance with the procedures and test rig parameters prescribed; A poster of one of Steve Dobson's projects at Kakadu National Park designed by Glen Murcutt.

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Thermal Mass vs Insulation

Bush Fire Bunkers and Fire Resistant House Designs using Earth.

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Details Inside

