

## HEALING PODS

THE PV ZERO-CARBON MASS  
CUSTOM HOME MISSION TO JAPAN

KINGSPAN LIGHTHOUSE: TAKING  
HOUSE DESIGN TO ANOTHER LEVEL

ALLOTMENTS IN THE  
URBAN ENVIRONMENT

## CONTENTS

## EDITORIAL

## ANNOUNCEMENT



front cover:  
**HEALING PODS**

- 3 ANNOUNCEMENT  
NEW COLLABORATION FOR CBE
- 4 THE PV ZERO-CARBON MASS  
CUSTOM HOME MISSION TO JAPAN
- 6 KINGSPAN LIGHTHOUSE
- 9 PLACES FOR PEOPLE REPORT
- 10 ALLOTMENTS IN THE URBAN  
ENVIRONMENT
- 12 GREEN URBAN SPACE
- 13 THE PARC DE BERCY
- 14 HEALING PODS
- 16 COMPUTTI COMFOMETER
- 17 JOINT EVENTS
- 18 PREFACE BY THE AUTHORS
- 19 VISIONS OF SUSTAINABILITY
- 20 CBE: BESPOKE CONSULTANCY  
AND RESEARCH SERVICES  
KTTBE AWARDS SCHEME



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As Prof. John Kelly, Academic Co-Director of CBE, has retired the CBE staff would like to extend our gratitude for his strong involvement in developing and co-directing CBE and for many seminars that he held within the CBE programme. We wish John an enjoyable retirement and we welcome Dr Iain Cameron as a new Co-Director representing School of the Built and Natural Environment at Glasgow Caledonian University who are the lead partner in the CBE project.

We are also very pleased that CBE has become the Construction Improvement Club in Glasgow of the Scottish Construction Centre (SCC). As CBE has supported the construction industry since 1998 when the first phase of the project started, we look forward to further expansion of our activities under the SCC umbrella.

As we were preparing this issue of CBE News we realised that all the articles are related to different aspects of sustainable built environment. Dr Masa Noguchi (MEARU, Mackintosh School of Architecture) and CBE organised a mission to Japan for companies interested in off-site construction of affordable housing with integrated photovoltaics. One of the mission delegates has provided his views on the lessons learned in Japan. As similar projects are being developed in the United Kingdom, CBE invited Kingspan Off-Site to present a low carbon house which they exhibited at the BRE Innovation Park in June 2007 and to provide a brief summary for this issue.

Preservation of the existing and the development of new green spaces will ensure that the impact of the built environment on the natural environment is reduced and that everyone has opportunity to enjoy the benefits that the natural environment provides. This theme is tackled in several articles related to future and past CBE seminars.

Regarding the methods for improving indoor environments, we have included an article on "Healing Pods" which provide models of different sensory experiences in mini-environments and an article on new IT devices for monitoring environmental conditions. We are also drawing your attention to an excellent book on sustainable cities and regions written by two academics at the Department of Architecture, University of Strathclyde.

If you are a small or medium size enterprise operating in the construction industry, we would like to encourage you to contact CBE if you need expert assistance from academics. Please refer to the KTTBE awards given to date at the end of the issue for examples of expertise provided. To find information on the forthcoming CBE events, please access our website at [www.cbe.org.uk](http://www.cbe.org.uk) or contact CBE to request our weekly electronic newsletter.



### Professor John Kelly Retires

John Kelly of Glasgow Caledonian University has retired from his position of Professor in the School of the Built and Natural Environment where he was the holder of the AWG Chair in Construction Innovation. John was also the Academic Co-Director of the Centre for the Built Environment for the University from June 2002 until his recent retirement and during this time made a tremendous contribution to the project and gave great encouragement, guidance and support to the team at CBE.

We would like to take this opportunity to wish John a long, healthy and happy retirement and many safe and happy sailing trips on his new yacht.

Thank you for all you did to make CBE a success.



### Dr Iain Cameron becomes new Academic Director of CBE

We would like to announce the appointment of Dr Iain Cameron, Head of the Division of Construction Management and Economics within the School of the Built and Natural Environment, Glasgow Caledonian University as the new Academic Co-Director of CBE. Iain has collaborated with CBE regularly over the years and has always been a strong supporter of the project, appointing the team to organise many research dissemination events for his work in the arena of Health and Safety and holding seminars for our clients. Many of you will know Iain from his long-standing and widely respected work in this area.

The Steering Group of CBE are delighted to welcome Iain to the project and value his guidance and support as part of the team.

## NEW COLLABORATION FOR CBE CONSTRUCTION IMPROVEMENT CLUB IN GLASGOW

The Centre for the Built Environment is pleased to announce a new collaboration with the recently formed Scottish Construction Centre. CBE has been appointed as the Construction Improvement Club in Glasgow for SCC. This means that CBE will assist the regional co-ordinator with the organisation of events which the Centre plans to deliver in the Glasgow area.

The Scottish Construction Centre has been set up in 2007 by Scottish Enterprise Glasgow. The Centre has been established to promote innovation and excellence in Scotland's construction industry and was a key action point for the Scottish Construction Forum on its formation February 2004.

The Centre is managed by CIRIA, who lead a team comprising the University of Dundee, Glasgow Caledonian University, BRE (Scotland) and Building Software Limited. Glasgow Caledonian University are managing the work in the West of Scotland.

The Centre is designed to serve anyone related to the industry whether they are planners, developers, builders, contractors, architects, clients, manufacturers or suppliers.

The main areas for service are:

- Helping Scottish construction sector improve productivity and performance
- Raising awareness of best practice and support services
- Help reduce industry fragmentation
- Provide 'one door' enquiry and signposting service
- Promote and increase the use of benchmarking and Key Performance Indicators
- Build a positive image for the industry
- Enhance links between industry and academia
- Stimulate industry innovation
- Encourage the development of new services
- Support the Scottish Construction Forum

### Construction Improvement Clubs

These are a network of focal points for cascading information on best practice. They will act as conduits for 2-way communication between SCC and industry practitioners. They will be the "front line" engagement mechanism for SCC tuned to local interests and needs.

For information on the Centre's work, or details of forthcoming events, please visit [www.scocon.org](http://www.scocon.org) or contact Douglas Fergus on 0141 331 8006 or email [douglas.fergus@gcal.ac.uk](mailto:douglas.fergus@gcal.ac.uk)

# THE PV ZERO-CARBON MASS CUSTOM HOME MISSION TO JAPAN



top: Group of delegates  
above: Show house



**Dr Masa Noguchi**  
**The Mackintosh School of Architecture**

The PV Zero-carbon Mass Custom Home Mission to Japan 2007 was carried out successfully on 3rd-5th September 2007. The mission was organized by Mackintosh Environmental Architecture Research Unit (MEARU) in collaboration with the Centre for the Built Environment (CBE).

In total, 18 delegates from the construction industry, academia, and the government in the UK, France and China joined the event that was tailored to offer them opportunities to visit five leading mass custom housing manufacturers in Japan (Sekisui Heim, Misawa Homes, PanaHome, Sanyo Homes and Sekisui House) and a large-scale solar community. The delegates were allowed to observe the companies state-of-the-art production and sales facilities that make possible the dissemination of their mass custom housing that is often equipped with an electromagnetic induction heating (IH) cooking utensil, an air-source heat pump and/or a combined heat and power (CHP) system in addition to a solar photovoltaic (PV) power generating system.

In prefabricated homes, the equipment for cooking, space-heating/cooling and water-heating tends to be all-electric, designed to drastically reduce the emissions of carbon dioxide when the houses are in full operation. The mission participants were highly appreciative of the warm welcome received from the companies visited. The mission might provide them with a new view of how to design, produce and market innovative eco-friendly low-energy housing and reinforce their motivation for future production of PV mass custom homes that correspond with the wants and needs of individuals and society of today and tomorrow.

**Scottish Building Federation's President, Billy Kirkwood, talks about his experience as a delegate on the mission.**

Mr Billy Kirkwood, current President of the Scottish Building Federation and Managing Director of RDK Construction Ltd, was one of the delegates who experienced the culture and activities of Japanese colleagues within the construction industry.

As Zero Carbon issues continue to headline the Media, both Billy and his brother Robert, who he is in business with, signed up for the trip. They had no doubt that as far as technology and manufacturing goes, Japan is no doubt a World Leader.

Billy commented, "What we were to encounter on our visits to the various house builders and manufacturing organisations was an unbelievable, well organised, respectable, environmentally friendly, collection of companies run by real people in a structured management system. I have never in all my thirty-four years in the construction industry seen so much dedication and organisation in delivering a very efficient off-site quality controlled home."

Billy continued, "My intention now is to seriously research and develop our own off-site closed wall panel system, this will be the main drive for our new manufacturing facility and production line. I wish to deal with the simple key issues first, such as higher energy efficient walls, cassette roofs and floors, air tightness and heat recovery. Thereafter, we will research and incorporate ground source heat pumps, solar water heating, rainwater harvesting and Photo Voltaic panels etc. The jury may still be out on Global Warming, and costs are an issue with regards to achieving such high energy standards, but as far as I am concerned, we all have a moral responsibility to raise the bar, and research, design and deliver a more sustainable product."

Scottish Building Federation members and the Scottish Building industry in general can help towards zero carbon issues, such as energy efficiency and waste management, by building a higher energy efficient product and achieving air tightness, as well as incorporating heat recovery systems. These items are not just for domestic new build but also for refurbishments, renovations, commercial buildings and extensions. Members can also lead with not just reducing waste on site, but also encouraging general waste recycling and energy conservation from the office to the canteen – encouraging all staff to be more active in reducing, reusing and recycling, to the benefit of all!

**"I have never, in all my thirty-four years in the construction industry, seen so much dedication and organisation in delivering a very efficient off-site quality controlled home."**



top: Billy and Robert in Japan  
middle: Visit to housing park  
bottom: Sanyo factory workers welcome the group

# KINGSPAN LIGHTHOUSE

TAKING HOUSE DESIGN TO ANOTHER LEVEL



*Windcatcher*



*Solar panels*

The Kingspan Lighthouse net-zero carbon home, unveiled in the Big Build Innovation Park area of the Building Research Establishment (BRE) OFFSITE2007 exhibition, is the most advanced house design ever produced for mainstream construction. With unrivalled levels of efficiency in terms of the construction method, energy use, CO2 emissions and carbon footprint, this high performance, sustainable home, which is exempt from stamp duty, pushes the boundaries of modern housing design and is the first to achieve the government's Code for Sustainable Homes Level 6, the standard to which all new homes will be designed and constructed by 2016.

Lighthouse is the next generation of Kingspan Off-Site's range of sustainable house designs and the company worked alongside Sheppard Robson, Arup, MacFarlane Wilder, Davis Langdon and CCB Evolution to realise this vision for the delivery of affordable and sustainable homes.

The 93m<sup>2</sup>, two and a half storey, two-bedroom house has been designed in line with Lifetime Homes and Scheme Development Standards (SDS) and every building material and component used has been specified for its ability to optimise the house design's overall sustainability credentials.

*left: Curved roof cladding*



*right: Kitchen area*

*main: External view of the lighthouse*

The Lighthouse was constructed by Chorus Group using Kingspan Off-Site's TEK Building System. With a U-value of 0.11W/m<sup>2</sup>K and airtightness of less than 1.0m<sup>3</sup>/hr/m<sup>2</sup> at 50Pa, this high performance SIPs (Structural Insulated Panel) based system delivers very high levels of thermal insulation and airtightness and has ensured that the designed heat loss values have been achieved in practice. As such, the heat loss in the Lighthouse has been reduced by around two-thirds compared to a standard new house.

This super insulated, airtight building fabric has been designed to provide generous daylight levels and includes effective solar control, together with integrated building services based around a platform of renewable and sustainable technologies designed by Arup. These include water efficiency techniques, such as low volume, sanitary ware and appliances, rainwater harvesting and greywater recycling, as well as renewable energy technologies, including a biomass boiler, building integrated photovoltaics (BIPV) and a solar-thermal array.

These renewable energy features have reduced energy fuel costs for space and water heating in the Lighthouse to around £30 per year and, as all electricity is supplied via solar technologies, electricity running costs are completely eliminated. The overall annual cost of the fuel has been reduced by about 94% (not including standing charges).



# THE KINGSPAN LIGHTHOUSE

## TAKING HOUSE DESIGN TO ANOTHER LEVEL



*main: Grey water system fitted behind the bathroom mirror*

*left: The wood pellets, which only cost £30 a year to heat the house.*

The Lighthouse also includes mechanical ventilation with heat recovery (MVHR), as well as a roof-mounted wind catcher, which provides secure night-time ventilation for passive cooling, in conjunction with thermal mass boards in the ceilings and external shading. There will also be containers for waste separation both in the kitchen and outside, so that waste can be recycled and composted.

Building services in the Lighthouse have been integrated with smart metering and monitoring, which records energy consumption and enables occupants to identify if any wastage is occurring, helping them to be more energy conscious. A simple home user guide will also be provided, which gives advice on how to run the house and will help to promote more environmentally aware lifestyles.

The Lighthouse will provide a blueprint from which a range of house types will be developed. Importantly, Kingspan Off-Site has devised technical systems and solutions that have been designed to allow housebuilders and developers to incorporate the concept of this innovative house design into any masterplan scheme to create homes with performance levels specifically tuned to meet whatever level of the Code for Sustainable Homes they require, from 1 right through to 6.

For further information please contact **Ieuan Compton** on **01908 266200**.

# PLACES FOR PEOPLE REPORT

## SCOTLAND'S LIVING LANDSCAPES

**Isabel Glasgow**  
Chair, Scottish Landscape Forum

The Scottish Landscape Forum was established by Scottish Natural Heritage (SNH), with the support of the Scottish Executive in June 2006. It brings together some of the key stakeholders with an influence upon or stake in the state of the landscape. Its terms of reference include facilitating discussion, preparing advice and promoting action for the better care of Scotland's landscape, so that its diversity, quality and integrity is maintained for future generations to enjoy. And 'landscape' means, for all Forum stakeholders, not solely areas deemed to be of high scenic quality and a focus on our more rural landscapes, but landscape that is found everywhere, including the townscapes of settlements. It is the concern of every one of us and our quality of life is dependent on its care; but too often it is the responsibility of no particular body and landscape concerns are put aside until it is too late in the day for real consideration. This issue is all the more important with the continuing acceleration of changes in our landscapes now and into the future together with the added impacts of climate change and the actions taken to reduce and mitigate its consequences.

This concern was shared by respondees to SNH's discussion paper-Scotland's Future Landscapes' and the idea of the formation of a Forum was born. It was originally established for nine months to complete some specific tasks agreed between members of the Forum and the Scottish Executive. This initial work focused on considering the implications of the UK's recent signing of the European Landscape Convention and how best to build on this in Scotland. It also advised the Scottish Executive on the landscape content of new planning policy guidance on the natural heritage. Forum members presented the Deputy Minister for Environment and Rural Development with their report, 'Scotland's living landscapes - places for people', in March 2007.

The Report put forward an agenda for action which members see as ambitious but realisable.

At a national level, it calls on the Government to lead the way to make Scotland a landscapes leader, including drawing up a Scottish Landscape Action Plan that puts into practice the principles of the European Landscape Convention.



It also calls for a national statement on landscape that sets the benchmark for Scotland's landscape work. At a local level, projects should be developed that involve the full participation of communities in care and decision making for their landscapes, and there should be the promotion of the importance of place and the very real benefits that good landscape supports in communities.

In terms of management and organisation, there should be a requirement on public bodies to be more pro-active in landscape matters, and there should be an increased breadth and depth of landscape expertise in public bodies. There should also be a stronger role for landscape designations, particularly National Scenic Areas.

In terms of policy, all new and existing public policy should be 'landscape-proofed' and a set of national and local landscape indicators developed for assessment of policy delivery. Effective provisions for landscape in Government policy statements and in the revised National Planning Framework should be developed.

The Scottish Landscape Forum is well placed to act as a focus for taking all these steps forward. It awaits a response from Scottish Government on its report and recommendations submitted in March 2007.

# ALLOTMENTS IN THE URBAN ENVIRONMENT

## IS THERE A NEED FOR PLANNERS AND DEVELOPERS TO CREATE A NEW PARADIGM?

**Judy Wilkinson**  
Scottish Allotments and Gardens Society



*Glasgow allotments*



*Swedish allotments*

Although the main purpose of allotments is to provide land for growing fruit and vegetables, various government policies acknowledge other potential benefits. The draft consultation Scottish Planning Policy SPP11: Physical Activity and Open Space<sup>2</sup> recognises their wider benefits as being valuable to the local community and the environment as they encourage physical activity and healthy eating, offer a place to relax and to learn, and contribute to local biodiversity. Consequently, allotment sites are particularly important elements in the diminishing networks of greenspace in our densely built-up urban areas.

There has never been a comprehensive analysis of the opportunity to garden in Scotland. However a recent survey of the allotment sites<sup>1</sup> shows there is a large unmet demand for plots and that allotment provision and support is variable within cities and across rural areas. There are many people who do not have access to a plot of land close to their home where they can garden. They cannot share the health, diet, skill development and community benefits that gardening provides and which are increasingly promoted through the media and garden centres.

The benefits of allotments are not recognized by many planners and Council officers in Scotland. George Black, the Chief Executive of Glasgow City Council recently refused to countenance the provision of an allotment in a new development because it was not appropriate in 'a scheme of high urban design quality'. Jim MacKechnie, a Glasgow Councillor says 'I am afraid that I do not believe that allotments would add to the amenity of the locality. They would be visually unattractive, and would occupy land which I believe should be open and accessible to the public in order to maximise community benefit'.

<sup>1</sup> 'Finding Scotland's Allotments'  
[www.sags.org.uk/docs/ReportsPresentations/AuditReport07.pdf](http://www.sags.org.uk/docs/ReportsPresentations/AuditReport07.pdf)



Other countries value their allotments and community gardens. In Boston, as well as conventional allotment sites there are numerous small 'growing patches' maintained by local people on walkways and as part of small local parks. In China market gardens are a central part of the urban landscape, essential to survival. In Göteborg the Colonies<sup>2</sup>, must be open between dawn and dusk during the summer for local people to walk through and enjoy. The Urban Design Compendium<sup>3</sup> cites the Parc de bercy in Paris a development of social housing of great quality where high quality modern buildings are complemented by parkland and allotments. Copenhagen has three kinds of allotments- ones that contain small cabins in the Nordic style, ones that are traditional Scottish style mainly vegetable plots and also school gardens. These allotments are part of the promotion of Copenhagen as a World Eco-city.

Allotment sites are living, growing spaces so they do change with the seasons and do not always look tidy. Perhaps today, too many people value the visual attractiveness of sterile open space design and it is a challenge for the landscape architects and developers to provide examples of good, high quality urban growing spaces. The Scottish Allotments and Gardens Society would like to work with interested parties to develop new designs for allotments as living, growing spaces that are accessible to all.

For more information please contact **Judy Wilkinson** on **0141 357 0207** or email **secretary@sags.org.uk**

*top: City gardens, Guilin  
middle: Boston, near Chinatown  
bottom: 4x4m flower patch, Boston*

<sup>2</sup> small community growing areas with cabins and gardens  
<sup>3</sup> English Partnership: Urban Design Compendium



# GREEN URBAN SPACE

## GLASGOW'S WEST END

**Dr Branka Dimitrijevic**  
The Centre for the Built Environment



*Botanic gardens*



*Residents' garden*



*Mature trees*



*Children's playground*

The aim of the Academy of Urbanism, established in 2006 as a virtual organisation of individuals and organisations, is to identify and promote the qualities that make the existing places attractive, as evident in the Academy's first publication *Learning from Place 1* (edited by Brain Evans and Frank McDonald) which presents 15 great places at the level of the City, Town, Neighbourhood, Street and Place. The principles recommended by the Academy for creating people friendly and sustainable urban spaces could be used as criteria for identifying other places whose qualities should be highlighted. Most of the principles can be recognised in the urban expansion of Glasgow, e.g. the West End, in the 19th century. The mix of high and low density housing of good quality, the provision of local schools, shops and other public services, and access to public transport such as trams and underground - the West End has them all, but unfortunately no trams any more.

However, this dry description does not explain why it is pleasant to stroll through the West End or live there. Mature trees along the streets soak the traffic noise, frame and soften perspectives, diffuse the light, protect from rain and wind, provide home to birds and squirrels, and clean the air. A rare glimpse into private gardens and towards houses is offered through the hedges that line the pavements. The larger, enclosed private residents' gardens are a quite refuge on sunny days for people who live in the surrounding terraced houses or flats. There are children's playgrounds, bowling and tennis clubs for playful socialising. On a sunny day, walking, running, sitting on a bench, picnicking, playing or sunbathing in Botanic Gardens and Kelvingrove Park show the enjoyment that the nature provides within an urban context. The allotments even more connect city dwellers to the nature enabling them to enjoy in gardening if they do not have a private garden but wish to grow vegetables and enjoy this outdoor activity.

It seems that the planners of the West End were inspired by the meaning of Glasgow's name, usually interpreted as a "dear green place", when they were extending the city. Embedded in the lush green tapestry, the West End ages well as a truly green urban development model.

# THE PARC DE BERCY

## A GREAT PUBLIC SPACE IN THE HEART OF PARIS

The park was built as part of a plan to revitalize the eastern side of Paris, which was traditionally poorer and less active than the western side. In June 1944, the first part of this park, located on the former Bercy wineries was opened to the public. This space, offered by the City of Paris was essentially made of lawns accessible round the clock as an extension of the Bercy sports centre. The second phase was completed in 1995.

The main elements of the site were preserved when the design was worked out, like century-old trees, paved lanes which now retain the rails of the trains that brought the wine to the warehouses and four buildings: the Bercy pavilion, a house of gardening, the lake house and the orangery.

The park is close to the Seine, covering an area of 139,747 square metres. It is geometrically divided, offering areas for children, gardeners, plant lovers, and those who just want to stroll. Water features blend into ethereal scenes, and elegant bridges and examples of creative sculpture join the segments of the park that are separated by a boulevard. There are areas for sports and an education centre. The park is connected to the surrounding area and is accessible on all sides. It is a working park in that it is mainly used by those who come into the area rather than tourists who don't seem to find it.

The romantic garden is characterized by the presence of ruins, fake mountains and elements of landscape relating to the theme of water. It is enhanced by a collection of trees remarkable for their barks like birch, willow, Norway Pines and Austria black pines. An 8 metre high terrace of limes trees runs along the whole park. There is a beautiful rose garden with 95 varieties of roses and a vineyard made up of a series of trellises covered in flowering vines. The lakehouse on the edge of the beautiful lake hosts many exhibitions.

The park is bordered by Bercy Village on its east side which is a newly developed chic shopping centre with restaurants cafes and bars all of which occupy some of the smaller old winehouses. There is a school of bakery and pastry which occupies some of the larger old warehouses. There is a high class commercial area nearby with lots of cafes which are very busy.

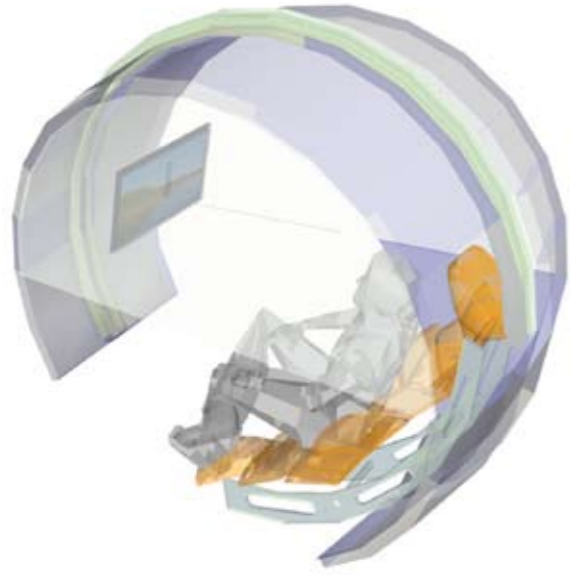


There are allotments within the park which are for the use of the residents of the nearby social housing for growing fruit, vegetables and flowers. A separate vegetable garden is tended by the schoolchildren of Paris and the Maison du Jardinage, House of Gardening, offers advice on all aspects of gardening to visitors.

All in all, there is something for everyone to enjoy and experience from nature in the heart of the city.

# HEALING PODS

## SENSE SENSITIVE HEALING ENVIRONMENTS



TRIBAL

The hPod is being developed by Tribal's architectural practice, Nightingale Associates, and other key groups, initially for a high profile exhibition at the Building Centre in London which opened in late autumn 2007.

hPods (healing pods) will be the culmination of over a decade of research in Europe, Scandinavia, Japan and America, resulting in the design of optimum healing environments for individual patient groups. Conditions ranging from burns trauma to bipolar depression could be helped in the future through the use of this technology and research.

Nightingale Associates director Richard Mazuch, an internationally renowned expert in this field, says:

"We hope that hPods will develop firstly into individual spaces in a healthcare setting. But ultimately the principles will be applied to rooms or even departments within a hospital. Eventually we'd like a prototype hospital to be built using all the data and technology."

The hPods for the exhibition, which will run until the spring of 2008, are small, enclosed spaces each containing a reclining seat. Their appearance is not unlike a flight simulator.

They will feature up to 16 healing environments, with the following patient categories:

- Neonatal
- Breastfeeding
- Seasonal Affective Disorder (SAD)
- Headache/migraine
- Oncology
- Chemotherapy
- Labour
- MRI/CAT
- Cardiac
- Bipolar depression
- Calming
- Energising
- Intensive therapy
- Phlebotomy
- Burns
- Jetlag

There is particular excitement about the burns hPod, as Richard explains: "We hope to demonstrate how burns victims can obtain extraordinary relief from pain by entering a virtual reality landscape of soothing snowscapes, cool colours, reduced temperatures and smells emotive of cold climates."

Other pods use different methods. For example, the neonatal pod will have an environment that mimics that of a uterus or womb in terms of temperature, light, etc. Meanwhile, the calming pod will deliver images of woodland and landscape that have been shown to lower respiration rates, blood pressure and heart rate within three minutes. Ambient sounds will also play a part in inspiring a relaxed mood.

Research into sense sensitive healing environments has been continuing for a decade now. So far, most of the work has been done on the traditional senses: sight (colour, natural light, art, views), hearing (pleasant and unpleasant sounds), touch (temperature, texture, humidity, pain), smell (pleasant and unpleasant). However, recent findings have indicated there are as many as 21 senses, some of which will be investigated for the hPods.



Electronics giant Philips is a partner in the project - for example, they produce special lamps for the SAD hPod. Other companies are also lending their expertise to ultimately provide a tailor-made 'cocktail' of sensations for each patient in keeping with their personal 'healing prescription'. Swedish company Ecophon is a case in point - it has been undertaking acoustic research with several universities, including Herriot Watt in Edinburgh and Lund University in Sweden.

Richard adds:

"The pods at the exhibition have flatscreen monitors inside and some heated or cooled, some oscillating, some have air pumped in... We are trying to harness all the research to create the optimum healing environment."

The latest news on hPods is that the project is hoping to secure European funding and is attracting much interest from the Department of Health (DH). Chief architect at the DH's estates and facilities section Chris Farrah says:

"This is the first time anyone has tried to grab hold of all of the information on sense sensitive design and make tangible modifications to the healthcare environment in this way. I will be very interested to see it in action."

Richard, meanwhile, gave a high profile presentation on the project to the Institute of Healthcare Engineering and Estate Management conference in October 2007, when several components of the hPods were on display, including Philips' lighting.

In the long term, healing environments, of which the hPod is a prototype, will use a smart card for activation. The card will contain a formula for a patient's optimum healing environment and when he or she enters a room, the building management system will recalibrate to provide the correct lighting, temperature, humidity, colour and ventilation.

...all of which is making the health and architecture communities put down their iPods and pick up on hPods.

For further information, please contact **Richard Mazuch**, Nightingale Associates, on **0207 079 9900** or email **Richard.mazuch@nightingaleassociates.com**

# COMPUTTI COMFOMETER

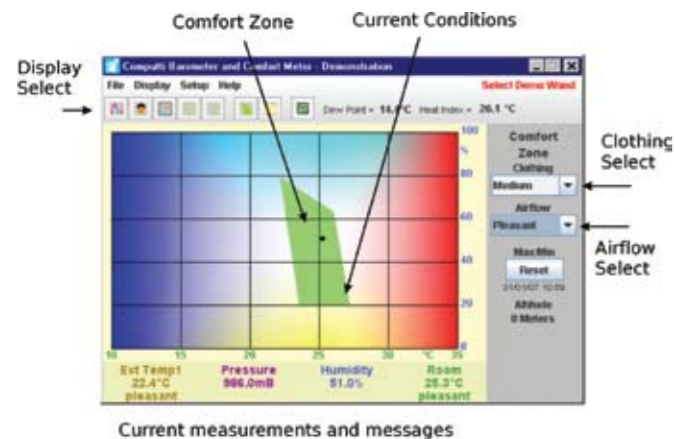
## A PC BASED THERMO/HYGROMETER

Dr Alex B Gardiner

0141 584 9445 abg@computti.com

### The Computti Ecowand virtual instrument concept

The new Computti Ecowand system was originally designed to show computer users sitting at their desks the environmental conditions around them. To do this, the local temperature and humidity are measured using a USB EcoWand and the readings are displayed on the computer screen. The device can be low cost (<£40) since the computer is doing all the calibration, display and input control work. A picture of the Ecowand Comfometer model and a screen dump of the Comfort Zone display are shown. The Thermal Comfort Zone can be adjusted depending on the clothing being worn and the airflow in the room. This display can be used to save energy by arranging heating/cooling/clothing/airflow so that you are "Living on the edge of the Comfort Zone". The Comfometer is the consumer orientated name we have coined for a scientific Thermo/hygrometer.



Current measurements and messages

### Added functionality using the PC

Since the measurements are in a computer, other things can be done with them. The screen dump shows some of possibilities.

- At the top right hand corner are displays of Dew Point and Heat Index. Both of these require measurement of temperature and humidity.
- Along the bottom of the screen, below the digital value readings, are the advice messages. These tell you what you can do to save energy while remaining comfortable.
- Top left are the other display menus, the most important of which is the History display.

At present, 2 days of information is stored, sampling once every minute. This can be increased to 8 days by sampling every 4 minutes. This allows the performance of the heating/cooling system to be monitored over time giving an indication of the effectiveness of the timing regime and of insulation and draft proofing etc.

### Added functionality for built environmental researchers

For the building environment researcher, other features are being added in collaborating with Chris Sanders at the RICH Centre at the School of the Built and Natural Environment, Glasgow Caledonian University. With Data Logging enabled, readings are written to disk as text files. These readings can then be imported into analysis programs. Logging can be continuous, timed or by alarm exception. As well as writing to disk, the readings may be sent to an analysis centre as an e-mail. Data can be downloaded at a certain time each day and/or exception data can be sent as it occurs thus alleviating the need for site visits to collect the data. With the Thermo/hygrometer, two other temperatures can be measured using the optional thermistor probes see [www.computti.com](http://www.computti.com) for details.

### Other Ecowand models

Two other Ecowand devices are made; they are the Barometer and Thermometer. The Barometer includes an atmospheric pressure sensor while the Thermometer contains only the temperature sensor but can take 3 external temperature sensors.

### Computer requirements

The system is based on a Java/USB combination so will run under Windows 98, XP or Vista, Macintosh OSX or Linux. The program is supplied with the Ecowand hardware and updated via the Internet.

### Summary

If a site already has a computer, adding the Ecowand turns it into an environmental data collection station at little cost. Using the Internet, environmental data can be collected remotely

COMPUTTI  
ECO-WAND



# JOINT EVENTS

## SOFT SKILLS

The Centre for the Built Environment is pleased to inform you that we have invited our colleagues at the **Caledonian Business School** to deliver a series of half day and lunch-time seminars for CBE clients. This is a result of requests from companies for seminars on topics like:

- Presentation skills
- Negotiation
- Teambuilding
- Leadership
- Building and maintaining relationships with clients
- People management in small businesses

The events scheduled to date are as follows:

**Thurs 17th January, 12.00-14.00 hrs**

**Employment Relations Update - Ronnie Caddow**

Business School, Glasgow Caledonian University

**Tues 5th February, 12.30 -16.00 hrs**

**Work-life Balance & Flexible Working - Gill Maxwell**

Business School, Glasgow Caledonian University

**Thurs 20th March 12.00-14.00hrs**

**Leadership and Management in context:**

**developing and managing self**

Irene Mains, Caledonian Business School

**Tues 25th March, 12.30-16.00 hrs**

**Managing Performance 1 - Gill Maxwell**

Business School, Glasgow Caledonian University

**Thurs 27th March, 12.30-16.00 hrs**

**Managing Performance 2 - Morag McLean**

Business School, Glasgow Caledonian University

Individual delegates wishing to book four or more events at once in this series will receive 20% discount.

The dates of additional seminars in this series will be announced on our website [www.cbe.org.uk](http://www.cbe.org.uk)

- Leading and Managing People
- Talent Management
- Achieving effective change with others
- Leadership for Creativity and Innovation
- Developing Your Personal Style
- Finance issues for the non-financial manager
- Employing people (for new line managers)



the centre for the **BUILT ENVIRONMENT**



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12.00 -14.00hrs

**Half day seminar** £45.00  
12.30 - 16.30hrs

*Cost includes buffet lunch and course handouts*

### Booking options:

Online at [www.cbe.org.uk](http://www.cbe.org.uk)

Phone: 0141 273 1411

Email: [cbeinfo@gcal.ac.uk](mailto:cbeinfo@gcal.ac.uk)

Fax: 0141 273 1418

### Venue for all seminars:

Room K505 5th floor

Buchanan House

58 Port Dundas Rd

Glasgow G4 0HG

When booking please provide the following details for delegates: Title, first name, surname, organisation, address, telephone, email and invoice address if different.

# PREFACE BY THE AUTHORS

There is no doubt that sustainability is a complex issue in general and that the sustainability of cities is a complex problem of particular urgency in today's world. This monograph came about because we decided to explore the challenge of complexity head on.

Sustainability is usually quoted as being composed of a balance between environmental, social and economic concerns all of which involve complex systems. In fact, we are all surrounded by and are part of complex systems even if we cannot yet exactly define what a complex system is. But that is not the point. We draw on ideas from the study of complex systems, not because it offers ready made answers, but because it offers insight into new ways to look for them.

The monograph is divided into two parts. In the first part we look at the quest for sustainable development at international, regional and national levels. The investigation has shown that the complexity of social, economic and environmental issues of sustainability is understood and comprehensive policy statements are developed at international level through the United Nations. However, when it comes to the translation of policy statements into sustainable development action plans, the comprehensive view is lost as nations do what they consider best for their development with little or no coordination at regional and global level. The inevitable outcome of this is that some of the overarching parameters are compromised and that sustainability at a global level is not achieved and under current arrangements is not achievable.

In the second part, we start by bringing together some important ideas from the science of complex systems. We find we can break down sustainability down into four states of complexity which correspond to lifelessness, the natural world, our world and tomorrow's world and we explore what each of these have to tell us about sustainability. On the way, we also come across the intriguing idea of emergence and how self-organisation and structure can arise.

We then look at how the states of sustainability can be applied to understanding the fate of cities in the past and how the sustainability of a city has depended on the maintenance of a viable bioproductive hinterland and a symbiotic relationship of the city with this hinterland that has provided it with all it needs to function and enabled its inhabitants to maintain their standard of urban living. In the penultimate chapter we draw together from each of the states a number of fundamental challenges to achieving such sustainability. Finally in Chapter 5, we review what we have learned and summarise what outstanding issues need urgent action.

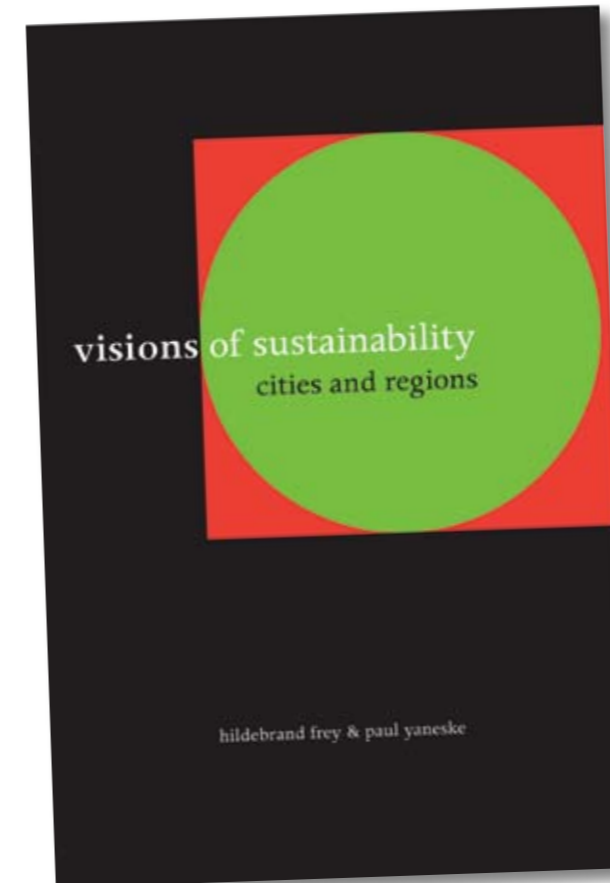
As we said at the beginning, sustainability is a complex issue and one of the biggest challenges to writing this monograph was the spread of disciplines that needed to be drawn upon, each with their own conceptual frameworks and jargon. This separation of knowledge into specialisations is a real barrier to the study of complexity. It helped that one author was an architect with a systems background and the other had come to architecture from a background in hard science. It is also rather ironic and symptomatic of the problem that having worked in the same University in the same Department in the same building for many years, it was only a chance conversation during a coffee break at a presentation of the University's Faculty of Engineering research to outside bodies that we discovered our common interest.

But then, as complex system theoreticians might say, it's a small world.

**Hildebrand Frey & Paul Yaneske**  
Glasgow, April 2007

# VISIONS OF SUSTAINABILITY

BY HILDEBRAND FREY & PAUL YANESKE



The destructive environmental impact of exorbitant levels of resource consumption, pollution and waste production, specifically in developed countries and cities, is an area of rapidly increasing concern. Efforts to find ways to generate sustainable development have intensified, with scores of research programmes and professional teams searching for viable approaches to, and strategies for, sustainable development. Political institutions, too, are in the process of developing indicators of sustainable development.

Visions of Sustainability examines the sustainability of cities and regions and concludes that currently sustainability is not achievable. By identifying how cities and regions in the past have maintained or lost sustainability and how cities and regions of today might achieve sustainability in the future, it;

- gives a clear definition of sustainability, and an understanding of its true meaning
- provides a new conceptual framework for the assessment of the sustainability of cities and regions
- reveals what options are available for humankind to achieve or loose sustainability
- identifies research that will allow the systematic establishment of the appropriate indicators for sustainable development in cities and regions.

Drawing from ideas of the study of complex systems, Hildebrand Frey and Paul Yaneske have developed a framework to guide and direct much needed new research in the measures needed to achieve and maintain sustainability. The book will be of considerable help to local authorities, politicians and government bodies responsible for establishing guidelines for the planning and monitoring of sustainable urban development. It will be of fundamental interest to ecologists, environmentalists, geographers, regional planners and urban designers, both in private practice and academia.



### **CBE: Bespoke Consultancy and Research Services**

There are many areas where specialist advice or research from our academic staff can be offered, and CBE acts as a channel to allow businesses to access this, for example:

- for specific projects - are you working on a project which requires you to outsource advice from a specialist?
- are you bidding for a project and need specialist advice for input to the bid or pre qualification questionnaire?
- would you like to discuss having specific research carried out which would give you a competitive advantage or increase your reputation as a specialist in a particular market?

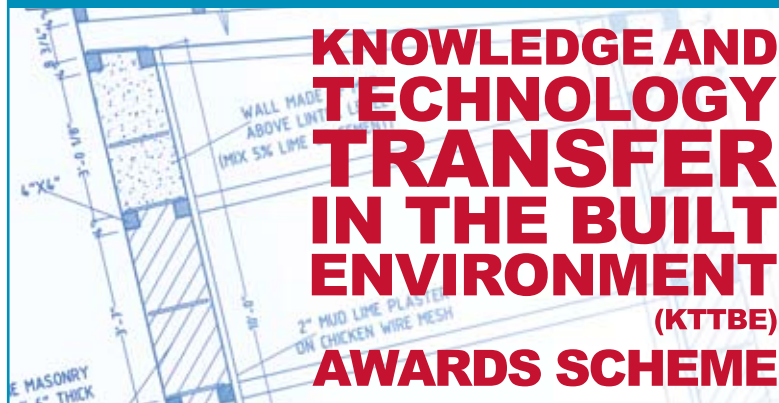
### **Consultancy services can be delivered in-house to suit your exact requirements**

We would be delighted to discuss your company's requirements and can assist in the following ways:

- Developing bespoke consultancy sessions on the topics you require and delivering them to your staff in-house.
- Delivering seminars from our series in your office at a time that suits you. The topics have been identified from feedback from our ongoing client survey.

We welcome your suggestions for topics for our regular weekly seminar series. If you are interested in finding out more, please contact Anne Blacklock, CBE Business Development Manager on 0141 273 1411 or email [anne.blacklock@gcal.ac.uk](mailto:anne.blacklock@gcal.ac.uk)

For a complete listing of all the expertise available, as well as recent research at each of the universities, please refer to our website [www.cbe.org.uk](http://www.cbe.org.uk)



### **Award winners from the second call**

The successful applicants during the second call, which closed on 25th May 2007, were as follows:

- **The Mackintosh School of Architecture, Strathclyde University and Alan Polkinghorne Ltd** to explore the feasibility of a system that installs a new form of insulation into the wall cavities of established buildings. Alan was introduced to the academic partners via Interface – the knowledge connection for business.
- **Collective Architecture and Strathclyde University** who will build temporary street and park furniture, constructed in reclaimed and recycled materials, to explore local opinion, potential use and scale, and to raise questions and local awareness regarding future technological elements in this type of furniture in public spaces.

### **The 3rd Call Results**

The third call was closed on 7th September 2007. Successful applicants were as follows:

- **The Department of Architecture, University of Edinburgh and Watson Stonecraft Ltd** who will prepare a feasibility study on rain-screen cladding using fabric formed concrete panels.

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