

Advanced Building News



International Initiative for a Sustainable Built Environment

ABN 03, May 2004

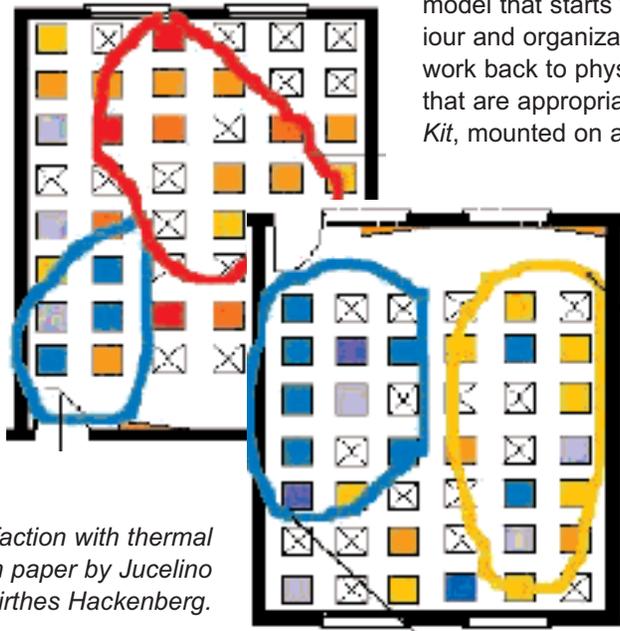
UK

Closing the Loop Conference

We recently had the opportunity to participate in a small (80 people) specialty conference on post-occupancy evaluation (POE), held in Windsor, UK in April. The conference was sponsored, inter alia, by the *Chartered Institute of Building Services Engineers (CIBSE)*, the *Oxford Centre for Sustainable Development at Oxford Brookes University*, *Teachers in Architecture (TIA)*, and the U.S.-based *Society of Building Science Educators (SBSE)*. The event was chiefly organized by Sue Roaf, Professor at Oxford Brookes University.

This was an interesting event, and the small scale allowed a fairly intense level of discussion. A web site will be established to hold PDF versions of papers presented. This will be worth looking at, since papers were presented by specialists in the field including Bill Bordass and Adrian Leaman (UK), George

Above right: Diagrams of satisfaction with thermal conditions in classrooms, from paper by Jucelino José Kellner and Mirthes Hackenberg.



Baird (New Zealand), Hal Levin (USA), Wolfgang Preiser (USA) and Judith Heerwagen (USA). In the meantime, a few selected highlights:

Kevin Kampschroer and Judith Heerwagen focused on the portfolio of buildings owned by the U.S. *General Services Administration (GSA)*. GSA is the property arm of the U.S. government, and has a big portfolio, with an average building age of 50 years. There is a lot of research on link between business and behaviour, but little of this has been applied to buildings. They use a model that starts with goals of behaviour and organizational change, then work back to physical requirements that are appropriate. A *Baseline Tool Kit*, mounted on a mobile cart, gathers baseline data.

An Expert Walkthrough is carried out to note the type and location of possible stressors (covered diffusers etc.). This info goes on floor plans, and an automated system then produces an “EKG” of the building.

In keeping with the emphasis on behaviour and organizational goals, the work includes Social Network Analysis to map relationships of individuals within work groups. GSA has reportedly found that investments in high-quality workplaces have higher ROI than other options,

Bill Bordass and Adrian Leaman are big players in the POE, having established their Probe process some 11 years ago, in cooperation with CIBSE. As outlined in the abstract of their paper... *The surveys covered both “hard” issues (e.g. energy performance and envelope airtightness) and “soft” ones (e.g. occupant satisfaction). ... The studies concluded that, although the buildings were good examples of their kind, similar problems also cropped up time and again; and there was often considerable scope for all-round improvement, sometimes by making things simpler.*

Some further excerpts from the paper:

Widespread technical problems (primarily in office buildings) included:

- Leaky natural ventilation systems.*
- Control systems and devices which did not suit occupiers or managers: from incomprehensible BMSs, to missing or unusable local controls.*

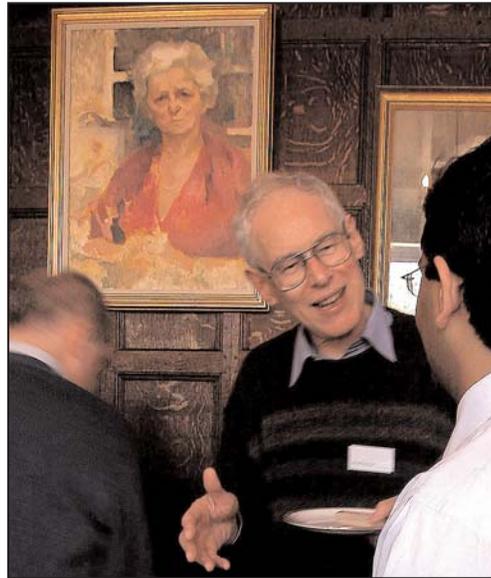
Frequently the problems led not only to frustrated, uncomfortable, dissatisfied and consequently less

productive occupants; but energy waste too. For example:

- ❑ A building with poor airtightness may not just use fraction more heating or cooling energy for air treatment: instead the plant may be left running 24 hours a day to help overcome the problems; and occupants may still be uncomfortable.
- ❑ If an attempt to maximise daylight also leads to glare problems, the result may be “blinds down – lights on” and very little daylight and view.
- ❑ Incomprehensible, unusable or intrusive control systems can often be over-ridden, causing the controlled systems to default to ON – the scourge of many modern buildings and a cause of massive energy waste.

The Probe process has resulted in a very valuable body of work, characterized by a combination of scientific rigour and pragmatism. Unfortunately, it is no longer being supported, but Bordass and Leaman have established a Foundation to raise funds for future work. The Probe material including reviews is available for download from www.usablebuildings.co.uk

George Baird (Victoria University, Wellington, NZ) described the use of a Probe-type questionnaire to assess the performance of 5 buildings in Australia, NZ, Singapore and Germany. Interestingly, Dr. Baird cited at least one instance of a university building being panned by staff, but loved by students – an example of the so-called forgiveness factor at work.



Bill Bordass in full flight with the unidentified lady over his shoulder obviously disapproving.

Kevin Hydes (Keen Engineering, Canada) reported on the use of a survey protocol developed at Berkely (see www.cbe.berkeley.edu) to assess seven “green” buildings in British Columbia, most designed with aims of improved energy efficiency and the use of natural ventilation. Some of the more interesting findings included a general dislike of low-flow toilets, an unplanned use of portable heaters, and a high level of satisfaction with indoor air quality and lighting.

What is especially interesting in many of these studies is the occasional gap between fine-tuned

theory and gritty reality. Bruce Forwood (UNSW, Australia), provided an overview of the POE of a university building, in which neither architect nor engineer were involved in commissioning and fans for night cooling were operating at 100% for 8760 hours per year.... In addition, a university official in a key position didn't like natural ventilation, and refused to distribute booklet on how to operate the building efficiently....

Most of the POE work reported on was confined to office or university buildings. However, Ana Hackenberg, a Brazilian architect, reported on a survey of 1040 workers in two industrial sites, and Fionn Stevenson, of University of Dundee reported on 12 social housing units in Scotland. The latter was of interest in again showing the importance of the human factor: although most architects would find the exterior of these row houses very attractive, the tenants disliked them very much, although



Social housing described by Fionn Stevenson

they liked the unit interiors. Another example of the Forgiveness Factor came in the presentation by Doris Kowaltowski (University of Campinas, Brazil) who reported that low-income owners of standardized social housing units in four small cities near Sao Paulo loved their units, as long as they had the freedom to modify them, including the ability to build shacks in the back for cousins, changing windows, adding garages, adding rooms, better finishes or garbage container areas.

It is interesting to note that, in the world of POE, researchers are dealing with operating buildings, actual performance and real people. This makes the work more relevant than predicting performance at the design stage, but it also requires a degree of diplomatic skills, since the data may embarrass both the designers and the owners. Hopefully, methods can be developed to obtain the use of valuable operating data while minimizing embarrassment.

This short review has covered only a few of the many excellent presentations at the conference, and our readers will be informed as soon as the website with the papers is operational. Professor Sue Roaf and her collaborators are to be complimented on the excellent organization and high quality of the event.

Finally, it must be noted that, the venue for the event being the UK, some attendees arriving at the conference were looking forward more to the agenda than the food. In the event, the food was staggeringly good, and this publication will make no more jokes in the future about English cooking.

Nils Larsson

Organizing for Action in Mexico

The Green Building Challenge Team Mexico and the Green Building Council Mexico have now merged as one single organisation. The new coalition, called *Consejo Mexicano para la Construccion Sustentable -CMCS* (Mexican Council for Sustainable Construction), builds on the strengths and capacities of both groups in favour of one common objective: advancement in the areas of R&D and market development for Sustainable Construction in Mexico.



The agreement was announced on May the 11th by Mr. Roberto Delgado, former President of Green Building Council Mexico. Mr. Cesar Ulises Trevino, previously Team Leader of the Green Building Challenge

Mexico, is now the acting President and CEO of the emerging association.

CMCS is now focusing on sponsorship campaigns and the establishment of strategic alliances, whilst launching a Sustainable Building promotional programme. CMCS will continue to maintain strong links with both of its sponsoring international organisations, iisBE and the World Green Building Council, and will continue to actively collaborate with both of these initiatives.

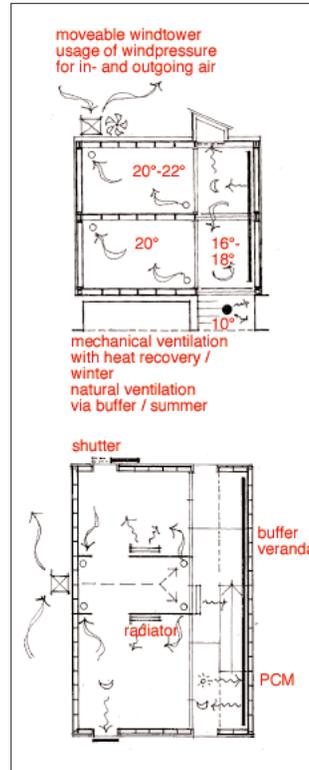
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Danish housing competition

In Denmark an international project competition has been launched that involves 8 teams of architects and engineers in order to obtain residential buildings with a high architectural quality as well as a very low environmental impact, see <<http://www.dcue.dk/Default.asp?ID=1195>>. The competition is related to the European project SHE (Sustainable Housing in Europe), see <<http://www.she.coop/>>. All the projects were examined by DBUR (Danish Building and Urban Research), see <<http://www.dbur.dk/english/>> regarding energy consumption during operation and environmental impact, using the tools BV98 (energy estimation) and BEAT (environmental impact assessment). The energy demands concerning energy for operation was 15/30 kWh/m²/year. The biological quality of the open space was also examined by DBUR. The winning projects will be built in 2005.

SHE: *Sustainable Housing in Europe* is a demonstration project funded by the European Commission under the EU 5th Framework Programme. The project, coordinated by Federabitazione Europe (Italy), association of Confcooperative, started on March 2003 and will end on February 2008. SHE aims to demonstrate the real feasibility of sustainable housing, through pilot projects in 4 different countries, Denmark, France, Italy and Portugal, applying sustainable housing to the common praxis and integrating sustainability criteria along with participation of the users in the main steps of the design process.



The two projects shown here are both winners, and jury comments can be found in the website.

Inspired by this competition, a Norwegian competition is being planned (Ed: Norway is not part of the EU, but sometimes likes their program ideas...).

Klaus Hansen
By-og-Bygg, Denmark

Above left :Site plan for project designed by Herzog + Partner, Munich (Germany).

Above, centre:A plan and section of one of the low-rise Herzog units.

Above, right: Site plan for project designed by Schmidt, Hammer & Lassen Architects (Denmark)

All graphics available on the website.

Advertisement

If you need to do research in the field of sustainable building, you should visit the global centre for this kind of information; the Sustainable Building Information System. This database can be found at <www.sbis.info>, and contains nine files on all aspects of SB, with interfaces in English and French (Spanish and Portuguese coming soon). We have over 1,200 downloadable PDF documents in the Documents file....

New LEED Variants

The LEED system, (Leadership in Energy and Environmental Design) , initially developed by USGBC for the construction of new buildings, is expanding to include existing buildings and commercial interiors.

LEED for Commercial Interiors (CI) addresses the specifics of tenant improvement projects, primarily in office and institutional buildings. It will be introduced this summer at NeoCon and will be released in late 2004. LEED-CI serves building owners and occupants as well as the interior designers and architects who design buildings and interiors.

Until LEED-CI is formally released later this year, projects can be registered and get certified under the current pilot program, which currently includes over 100 participants.

LEED for Existing Buildings (EB) is also scheduled to roll out this year. LEED-EB serves building owners and service providers. It addresses building operations as well as on-going facility upgrades and performance improvements. LEED-EB piloted in January 2002. Over 100 projects, comprising over 17 million square feet, have registered with the intent to certify under the LEED-EB pilot program. The market for LEED-EB is over 80 times larger than the new construction market. LEED is the nationally-recognized design guideline that builders, owners, architects, developers etc., turn to in order to define green building in the U.S. For more information on USGBC and LEED, or to register a pilot project go to: www.usgbc.org

Taryn M. Holowka, USGBC

News from Spain

The Spanish GBC Team is midway through the process of selecting of the Spanish buildings to be evaluated and presented at the SB 2005 conference in Tokyo. Since January, and in order to compare and pre-evaluate their main performance environmental aspects, a pre- assessments process has been carried out with the 15 buildings submitted for the GBTool evaluation. Those buildings will also be evaluated with the Spanish assessment tool "VERDE" under development at this moment.

The final stage of this proces, will be the technical visits to the proposed buildings that had just started the first week of June; This will help, together with the technical report from the pre-evaluation, the executive board of the Spanish GBC Team, to make the final decission for the selection of, at least, the two "best" case studies, probably one residential and one commercial. As the quality and interest of the proposed case studies has increased significantly, the final selection will not be easy but, the selected projects will clearly represent the current Spanish Sustainable Building activities.

New Government re-organises Housing Ministry

The new Government arising from the recent general elections, has re-organised the Housing Ministry , responsible for the sustainable building activities under the DGVAU (General Directorate for Architecture, Housing and Urban Planning) and therefore the GBC Spanish Team. This change hasnot caused any delay in the GBC work -- on the contrary, the new administration has shown great interest in sustainable building activities in general

and for the GBC in particular.

*Miguel Angel Romero, Architect
Spanish GBC Team*

SBIS interface soon to be available in Portuguese and Spanish

Portuguese and Spanish interfaces for SBIS - Sustainable Building Information System - will be launched at the I Conferência Latino Americana de Construção Sustentável (laCS'04), the Latin American SB'04 conference to be held in São Paulo, Brazil, from July 18th to 21st.

Currently, the SBIS system interface is available in English or French. Final revision work related to the augmented interfaces will be finished soon, and a SBIS CD-ROM will be distributed to all delegates at the Conference. Next steps are to increase the number of documents and information in these languages and to make the system available also in HTML format. Currently almost all of the information stored in SBIS database is in English.

Mechanisms to automatically synchronize SBIS and a Brazilian scientific database will be studied. The HTML version depends on a new round of sponsorship, but has raised interest among key construction actors in Brazil. The translation work has been carried out with the support of the Spanish and Brazilian GBC teams. Preliminary work has been carried out on Italian, Polish and German versions, and if support can be found, these will also be implemented during 2004. To see the SBIS system, go to: <http://www.sbis.info>.

Staff , with information from Brazil GBC team and Inpol Consulting.

The Green Islands of Wroclaw

The background: Visiting Wroclaw last April, the author came across this very comprehensive project. The scientific approach taken by members of the group, their enthusiasm and support from local authorities were all factors in the creation of this unique pilot project for an ecological protection zone. Space limitations prevent us from presenting more than a brief overview of the project, using, in many cases, edited citations from the study.

The project proposes the protection of an urban area of 11 km² in the form of two islands created artificially centuries ago within Wroclaw city limits: the smaller Opatowicka Island, and the larger Great Island. For the sake of the study the area is called “the Green Islands”.

Both islands are the result of an accumulation of individual housing estates, exhibitions and areas of greenery. At present, the area requires urgent steps towards in controlling land speculation and parking and commuting issues, both of which induce environmental degradation.

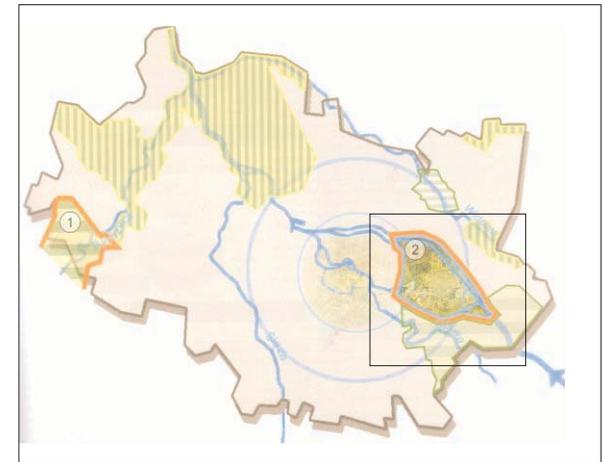
The first step of intervention by a Wroclaw City Council was to take control of both islands individual protection plans as the result of the declaration of the area’s inclusion in the regional urban plan. The second step was to implement local planning arrangements, and (working in conjunction with the Scientific Research Committee) the pro-ecological project package for the area. The presented package provides the basis of a Local Agenda 21 proj-



ect. The purpose of the project is to build a balanced city district, which will become the benchmark for other, similar areas of Wroclaw.

As Dr. Wojciech Kosinski commented ...the main goal was to make green islands a magnet for visitors and for regular inhabitants - all who deserve comfort and beauty of the healthy and friendly environment. The project shows a variety of possibilities to improve environmental conditions - limiting traffic noise, particle and gas emissions, retention of rainwater, managing water resources, development of greenery and safety for the native fauna.

For additional detail, contact Woytek Kujawski at <kujawski@magma.ca>.



*Maps of urban traffic and protected green areas
The square shows the Islands (K.Cebrat, M.Sowa)*

One of the most important factors was the co-operation with the local community. Based on the success of that example, permanent consultations are planned for similar projects, and not only with community, but also with media and all other partners.

In their work, the team took into consideration several existing European examples of urban developments such as: Ekolonia, Hellersdorf, Bo01- all presented at the various conferences, and other developments in urban areas: Hammarby Sjostad (Stockholm), Pilestredet Park (Oslo), Distrikt Vauban (Freiburg) built or modernized in a complex way.

The goals of the Green Islands project include:

- ❑ Spatial order: preservation of the landscaping identity, improvements in building standard, commuting and climatic conditions, development of public spaces according to the site character;
- ❑ Natural order: use of rain water, improvement in quality of soil, preservation of biodiversity;
- ❑ Social order: organization of the system of partnership activities, ecological education;
- ❑ Economic order: raising the effectiveness of investments, and providing clear description of goals and measures to describe them

Assessment Framework

The team has developed its own "Green Audit" based mainly on several existing international rating systems. The final framework consists of the following categories and criteria:

- ❑ Location: site selection by natural and cultural conditions, accessibility of public transportation;
- ❑ Site development: density, location and orientation on site, rainwater collection and use, garages and parking spaces, fauna, greenery and water elements, reduction of the heat island effect;
- ❑ Building structure: form- natural/cultural conditions, green energy.

Each criterion has 4 to 10 positive points and usually 2 to 4 negative points.

The system is easy in use and provides very quick assessment directed to ecologically educated developers, owners and the public. The final intention of the project managers is to develop an assessment system which will relate to investment credits determined by the scoring. At the same time it will raise the knowledge of the average owners about the value of their building depending on sustainability criteria.

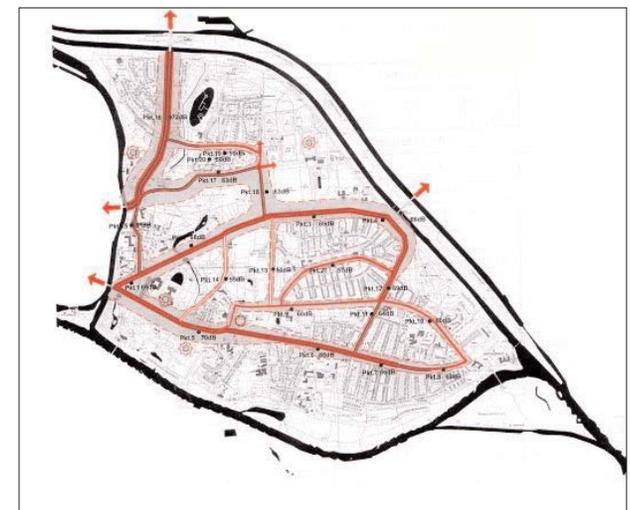
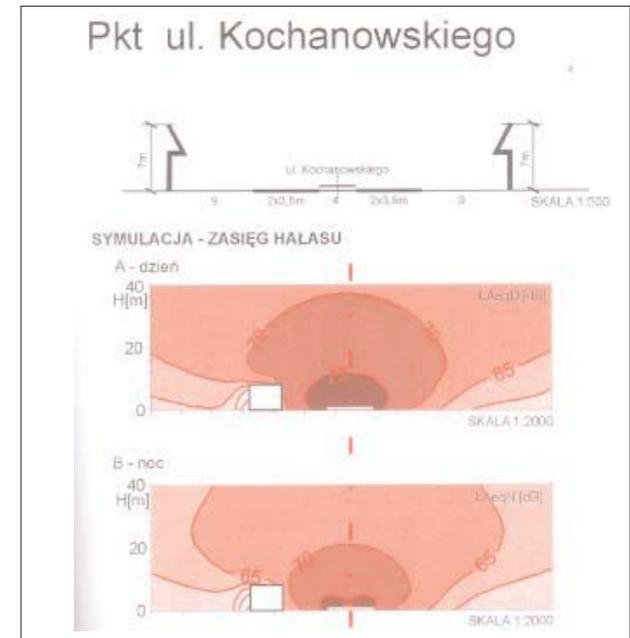
Dealing with urban noise

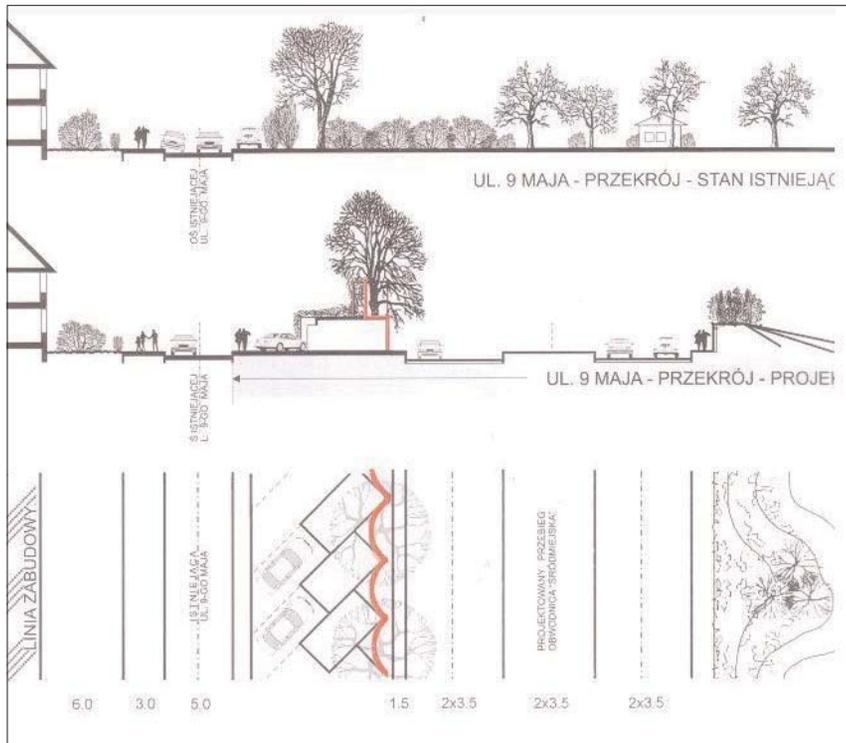
Residents in the Green Islands project will be exposed to urban noise levels, and this has led to the prioritization in legislature of human- friendly, noise- free places. The acoustic climate evaluation for the Green Islands has been conducted and performed on the basis of area investigation and research, as well as simulated calculations based on Wroclaw development plans, especially in terms of the future traffic network.

The simulations were illustrated by the chosen examples of main streets, district streets, local roads and the planned highway with its neighborhoods: low-rise and high-rise buildings, and park area.

Results of calculations were presented as a map (right) of the acoustic environmental quality of the given area with gradual red for level of noise (40 - 75 dB). As the part of anti-noise measures, the acoustic screens, well integrated into their surroundings, have been proposed.

The scope of current Polish noise standards does not include outer suburban areas, parks, green areas or other types of recreational areas within the





city limits. Noise is not taken into account within the space planning projects implementation, or in the investment and area management processes. In the Green Islands plan, the stress has been placed on primary environment protection issues arising from impact of commuting traffic noise. The requirements referring to the location of parking lots near protected areas were defined and evaluated on the basis of simulated research.

Project Summary

Analysis of the Green Islands shows that steps should be taken as soon as possible to reverse the process of creating isolated ecosystems resembling islands of green being absorbed from all directions by artificially developed areas.

Within the city limits the idea of protected zoning may not always be applied. More often than not, there is no transitional area that would protect greenery against other, frequently strongly degrading, impact of its neighbors as it appears in the case of the Green Islands. It has been assumed that the only way to protect, which may be used here, is to make all urban-

ized areas permeable to nature.

The project focuses then on the directions and methods of "city naturalization" with a simultaneous promotion of specific approaches to nature and the society. As part of local agenda 21, the Green Islands projects shows the opportunities and methods to be used by local community wishing to become involved in managing landscape unique to the city, region or country.

The project developers expect that all individual projects within the area will also follow the four principles:

- do no harm
- strengthen the existing natural interrelations and preserve site landscaping tradition
- develop the existing networks of natural interrelations by making built-up areas of available indigenous plants and animals
- use to the maximum the existing natural resources to meet human needs.

The Green Islands project is still quite theoretical but it points out a direction that is quite promising – as long as implementation follows the roadmap defined in the plan.

by Woytek Kujawski, based on information provided by Dr Alina Drapella-Hermansdorfer, Department of Architecture, Wrocław Technical University, Poland

Assessment of buildings is part of SINDUSCON-SP Agenda for SB in Brazil

In 2002, the Contractors Association of the State of São Paulo (SINDUSCON-SP), one of the most influential organizations in high level decisions regarding the construction sector in Brazil, started a campaign which, included a series of workshops dedicated to the theme "Building and Environment".

Specific workshops gathered academics, constructors, architects, consultants and public authorities in a common arena, to raise awareness about the environmental impacts related to building activities. The discussion had evolved to the perception of a broader picture which brought also the social and economic dimension up for discussion.

In one of these opportunities, a proposal of a multi-phase building assessment process was presented for discussion. This preliminary version was lapidated; essential items to be evaluated were identified, as well as possible weights to be assigned to each main theme and sub-categories to keep significance to Brazilian conditions.

Following a pragmatic Environmental Agenda proposed by Industry Association of State of São Paulo (FIESP), SINDUSCON-SP has developed its own Agenda for SB. Further development and implementation of the assessment system is now definitively part of it. A revised version of

the assessment tool will be presented in a new workshop in June, marking the beginning of a pilot testing stage.

Vanessa Gomes da Silva
<vangomes@fec.unicamp.br>

Progress on GBTool for 2005

The software used as part of the Green Building Challenge assessment process is called GBTool. Versions were developed for the previous rounds of technical work, and a new version is now under development. The new version (see also ABN 01) includes a simplified Design Assessment Tool

(DAT), and a separate Post-Occupancy Evaluation (POE) module, following the same structure. The GBC-DAT tool will be released to GBC national team developers on or about July 1, and they will then produce their own variants. The GBC-DAT tool is designed to operate in two languages, with the regional developers having a choice of using generic criteria or substituting their own. The system also allows up to three different building types to be assumed within a single project.

It is expected that many GBC teams will carry out assessments using their versions of the tool in time for the SB05 conference.

News about other SB04 events

In previous issues, we have told you about several sustainable building conferences, jointly sponsored by iiSBE and CIB, that are being held in various parts of the world during 2004. Below is an update on some revised conference dates. Note that the Shanghai SB04 is now a few days earlier, and the Kuala Lumpur SB05 has moved into 05, giving us a

bit of a nomenclature problem. The members of iiSBE and GBC countries have decided to hold their iiSBE Annual General Meeting and the Fall technical meeting just ahead of the Warsaw SB04 conference., on October 25 and 26.

Stop Press !

The Canadian SB05 team is getting organized, and the role of Chair has been accepted by Bob Bach, a very knowledgeable and experienced engineer, while Woytek Kujawski will serve as vice-Chair, focusing on the technical assessment process. The team will assemble via teleconference in mid-June and it is expected that a dozen or so influential and skilled industry actors will participate. The team will focus first on establishing a program and raising funds. Contact Bob at bbach@energyprofiles.com.

Region	Location	Date (04)	Website
Latin America	Sao Paolo, Brazil	18-21 July	http://www.clacs04.org
Africa	Stellenbosch, S.A.	13-18 Sep.	http://www.sustainablesettlement.co.za
China	Shanghai, China	20-22 Sep.	http://www.jk.sh.cn/websb04/index.htm
Central/East Europe	Warsaw, Poland	27-29 Oct.	http://www.itb.pl/sb04Warsaw
Southeast Asia	KL, Malaysia	11-13 April, 05	http://www.cibklutm.com/



Reportedly for sale:

Apartment building by Le Corbusier in Geneva; looks like it needs some repair work, but has great views of the lake. Apparently, an offer of about \$11 million Swiss Francs was turned down. But it has over 20 units...



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Action for Sustainability
The 2005 World Sustainable Building Conference in Tokyo
SB05Tokyo

27-29 September, 2005

The 2005 World Sustainable Building Conference in Tokyo

iiSBE and CIB are pleased to announce the SB'05 conference, to be held in Tokyo.

The conference is being organized by public and private-sector organizations in Japan, with the support of iiSBE and CIB.

For details, see:

<http://www.sb05.com>