

BEHNISCH ARCHITEKTEN + FMSA ARCHITECTURE

STUTTGART, GERMANY MELBOURNE, AUSTRALIA

Behnisch Architekten and our proposed climate/environmental engineers Transsolar have established and maintained a long-term working relationship, completing numerous projects in both central Europe and North America. The common foundation of this collaboration is the belief and confidence that high-quality built environments can be realized with less consumption of natural resources.

When working abroad we seek to work together with partner firms who share the same sensibilities. In this context we will form a consortium including; Behnisch Architekten, Transsolar, FMSA Architecture and Umow Lai Consulting Engineers. Behnisch and FMSA made acquaintance at the Eco-Edge Conference hosted in Melbourne in 2008. Our firms quickly realised a synergy and likeminded approach to Architecture and environmentally sustainable design.

We are confident that the strength of the team and the proven record of its respective members will allow us to assist Melbourne University in realising its ambition to provide the community with an outstanding new facility which will serve as a benchmark for future campus redevelopment and for future generations.

BUILT PEDAGOGY

The social dimension of architecture is fundamental to our design philosophy. For us **architecture and urban design** are generated by the intellectual, spiritual, and material needs of people. We recognize the importance of fostering a climate in which an ongoing dialogue between client, user and the community can prosper. Our approach to design is one of full integration where sustainability is not considered as an 'add-on' but embedded in every design decision. We seek to integrate site-specific sustainable solutions rather than relying on preconceived notions about form or environmental design.

Successful design extends well beyond the use of materials and energy savings to address aspects such as quality of life, health and social inclusiveness. However, perhaps the most significant aspect is that of **civic sustainability**, i.e. the ability of a new development to contribute towards sustaining the needs and ambitions of a larger community and to serve as a successful civic amenity. In this context we believe that design can address concerns about segregation, alienation and increasingly privatised lifestyles through active engagement and **connecting the campus with its community**.

THE ACADEMIC ENVIRONMENT

A fact that is currently underestimated, but rapidly gaining in importance, is that ever fewer jobs are being created in the developed world. Available jobs require ever-increasing qualifications, leading to greater competition and related recruitment and staff-retention difficulties.

Staff inspiration and motivation is only in-part financial; the so-called "New Workforce" expects high quality work environments, which correspond to their own values and ideals. It is therefore reasonable to assume there will be increasing pressure on both building owners and architects to plan facilities people can easily identify with; buildings that allow the individual to customize their own workplaces, to individually control their environments - their 'microclimates'. We believe that this fosters individual responsibility, as well as a stronger affinity with, and acceptance of, one's surroundings. Such qualities will assist in **attracting and retaining the best people**.

The lack of communication between employees in companies, as well as between staff and students, in academic environments is partially caused by the fact that only necessary work areas are programmed. Recreation areas tend to be formalised by building programs, which does not allow real freedom or provide for alternative patterns of use.

Flexibility and adaptability for different modes of occupation are essential for sustainable design, creating open and flexible spaces that can accommodate diverse and changing uses. Modern academic design requires integrated spaces for instruction, discussion and socialising that use strategic spatial manipulations to encourage connection and interaction.

Ever evolving methods of education and fields of research demand that facilities be more receptive to growth and change. Both flexibility and expandability are more and more a necessity. Working practices will, with the increase in computer-based research, inevitably result in a different type of teaching studio. Individual buildings should be perceived as an easily adaptable framework, to be refitted or reinstalled with further equipment, at a later time as and when required.

Our architecture is predicated on the belief that people need to become reunited with the consequences of their actions

THE DESIGN STUDIOS

The flexible design of **formal and informal spaces encourages interaction between students** from all year levels, while still providing acoustic and visual privacy which enables work to proceed without interruption where necessary.

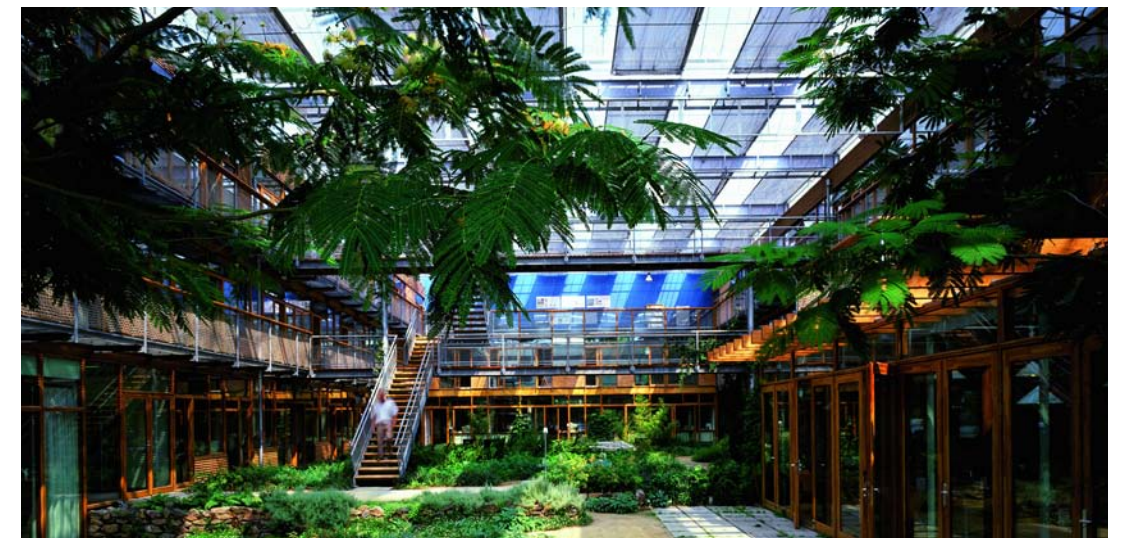
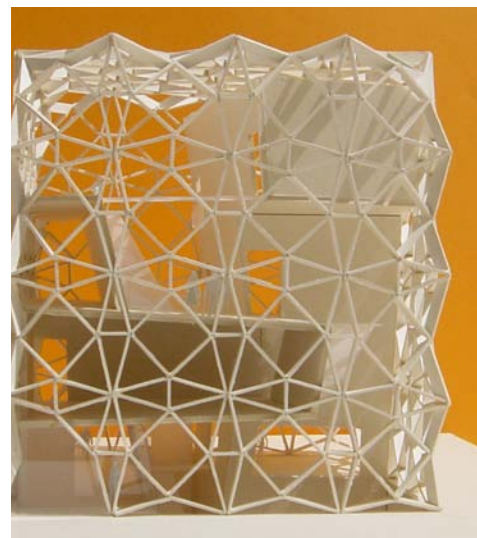
Architectural studios are the focus of the learning space; a place of **immersion in professional culture and driven by advanced theories of studio and classroom design**. They provide for experiential learning and global engagement in relevant social issues.

Industry-academia partnerships are encouraged as part of the methodology throughout delivery of the project where students are able to engage internationally via video conference units requiring specialised space requirements.

THE LIVING BUILDING

The overarching objective as it relates to **environmental performance systems** and control is to design the building as an integrated whole. An intelligent building design will have a sophisticated building management system connected to a range of environmental sensors and to the building's environmental control mechanisms. But beyond this conventional definition, whole building intelligence is achieved through a design's ability to exploit the energy available in its environment to accomplish most or all of its environmental responsibilities, supplementing this free energy with hybridized active systems only during outlying climactic and occupancy conditions.

It is the users of a building who have the greatest influence upon its ecological value through their daily behavioural patterns. It is therefore logical to seek to identify and promote mutually beneficial relationships between building and occupant. The Ecology Design Synergy will take advantage of local climate conditions to provide high levels of occupant comfort whilst still having access to high quality natural light, ventilation and acoustics.



HARVARD'S ALLSTON SCIENCE COMPLEX

BOSTON, MASSACHUSETTS USA

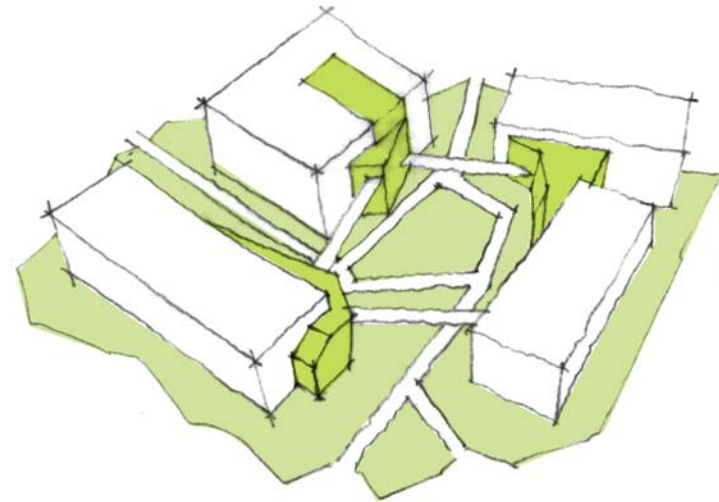
Over the last century the Harvard Campus has grown considerably. Not only have its borders been expanded but the university has also responded to the insatiable need for more space by introducing higher density developments at the centre of the existing campus.

Harvard has a long standing tradition of vital campus life. The 'center' of the traditional campus is characterized by a *network of courtyards, lawns, squares and parks* similar to that of *Melbourne University*. The yards are spatially and functionally complex, importantly recognizing human scale and providing access and thoroughfares and offering places to rest or study with varying degrees of shelter and protection.

The principles developed for the design and expansion of the Harvard Campus into Allston are rooted in a thorough analysis and understanding of the character of the campus on the Cambridge side of the Charles River.

In striving for a strong balance between building mass and open space, opacity and transparency and the relationship between materials inside and outside, the spaces and proportions of the existing campus provide guidelines for the contemporary and future orientated new science buildings. At the same time the new facilities emphasize the fact that the university is *entering a new era where study, research and urban life are intertwined*.

The design for the 51,000m2 facility fosters interdisciplinary research and communication. It recognizes that a vibrant university campus is undoubtedly better when supported by a series of *well connected buildings* of a familiar size and situated in a beneficial green setting, grouped around courtyards or yards.



ARTS + BUSINESS GATEWAY

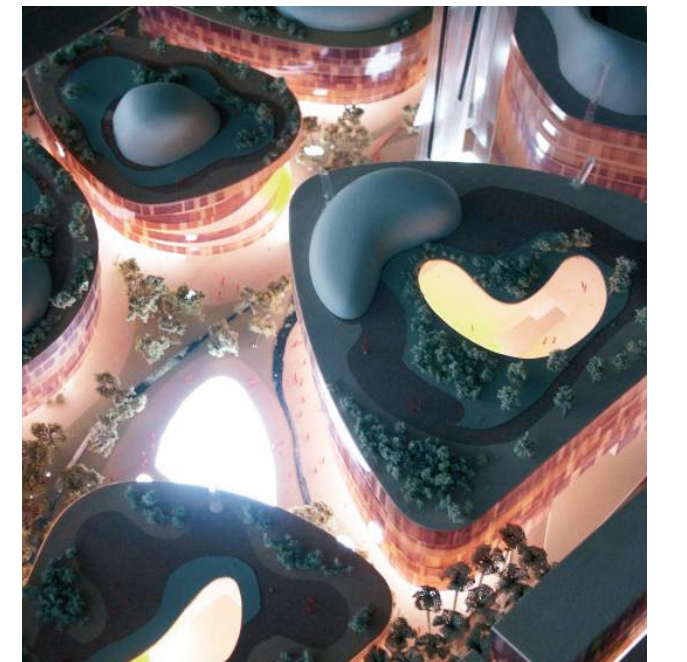
ARIZONA STATE UNIVERSITY (ASU), ARIZONA USA

This competition was for an innovative mixed-use development with academic, retail, student housing, hotel and public spaces on a 13 acre site.

The architectural and urban design emphasised a strong connection between public life and the university campus. The University also desired that the academic buildings satisfy high LEED (Leadership in Energy and Environmental Design) requirements similar to Greenstar.

At its heart lies a large scale outdoor public environment, *sheltered from the excesses of the desert climate* by both the surrounding buildings and the definitive 'cloud-like' structure which lends the new building complex a distinct appearance.

Behnisch Architects in collaboration with Foster & Partners and Will Bruder Architects.



BROADMEADOWS S.D.S

BROADMEADOWS, VICTORIA AUSTRALIA

Our team had the opportunity to work with educational planner Rubida Research in developing a new pedagogical response for a unique educational philosophy and curriculum. The classroom cluster studies investigate space mapping with pedagogy.

MONASH UNIVERSITY LEARNING CENTRE

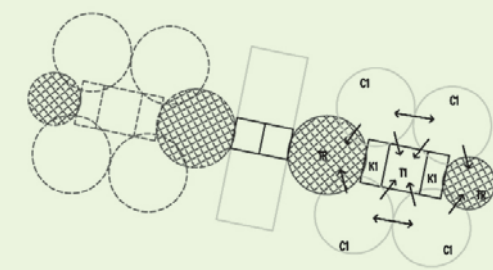
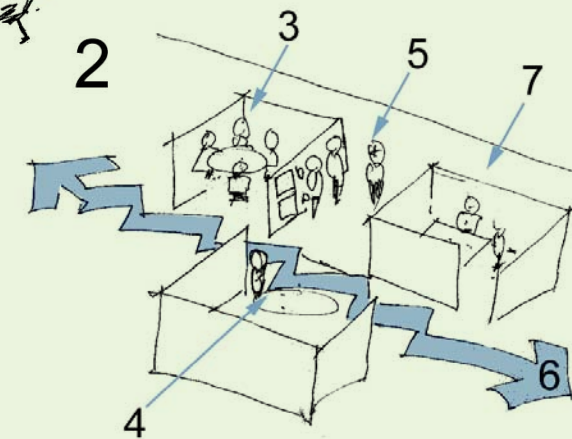
GIPPSLAND CAMPUS, VICTORIA AUSTRALIA

This facility extends a library as a learning space. It incorporates; food preparation, information, collaboration, transition, teaching and lounge zones. The space allows for interaction on all levels, including global, via video conferencing, using similar space mapping to the Broadmeadows project.

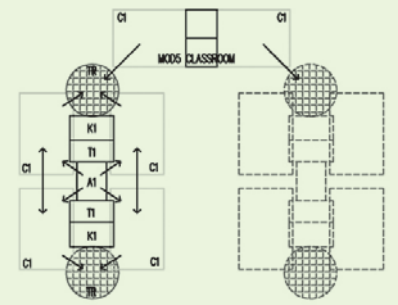


Noisier	Interactive Social	2	5			
	Creative Information Processing	4		3	6	1
Quiet	Reflective Personal			7		
		Teaching	Transition	Collaboration	Information	Lounge

STUDIO ZONE EXAMPLES



MODEL 1: CLASSROOM CLUSTER
 CI-INTERNAL CLASSROOM SPACE CATERED TO EACH STREAM
 EY- CARPETED (GROUP), NET AREA, QUIET AREA
 MY- COMMON LEARNING AREA, NET AREA, READING/RELAX AREA
 SS- COMMON LEARNING AREA, LOUNGE AREA, SMALLER RELAX AREA
 TR-ADDITIONAL 'TRANSITION' SPACE UNDERCOVER OUTDOOR BREAKOUT LEARNING SPACE SHARED x2



MODEL 2a: CLASSROOM CLUSTER

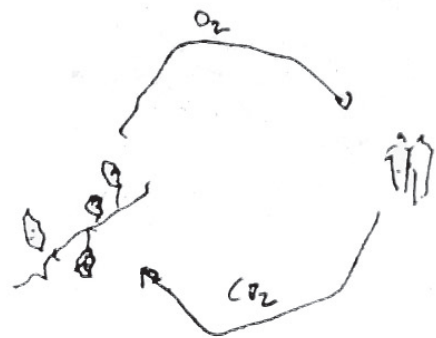
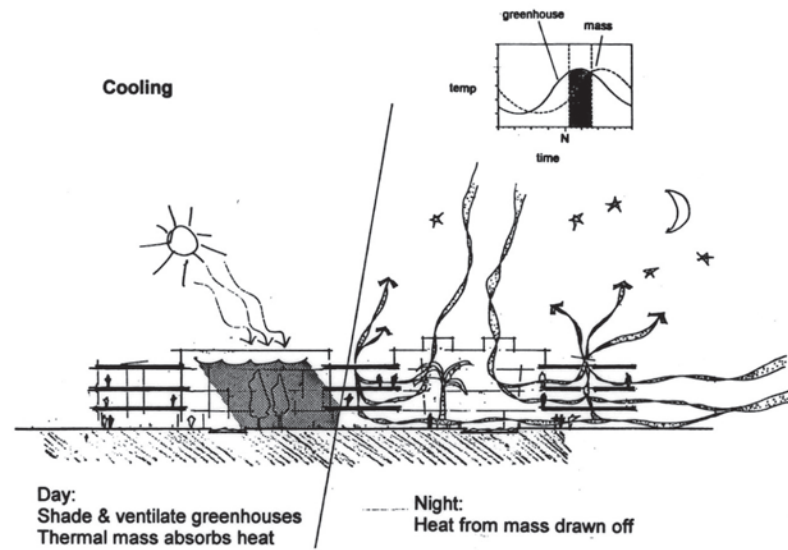
INSTITUTE FOR FORESTRY + NATURE RESEARCH

WAGENINGEN, THE NETHERLANDS

The architectural approach was to create a functional, user-friendly research facility working in harmony with nature; *versatile and ecologically sound*.

The building embraces the landscape with all workplaces in direct contact with *indoor and outdoor gardens*. Two indoor gardens provide the focus for daily activities and function as informal meeting areas. They are also an integral component of the building's energy concept with the glazed roofs dramatically improving the performance of the external envelope.

This EU pilot project for ecological construction incorporates progressive ideas from both the client and user groups, creating a multi-layered framework that is capable of responding to the multitude of demands in a research establishment. The project was realised within a standard budget demonstrating that durable and sustainable building techniques can be applied without additional costs.



The oxygen cycle



NATIONAL CENTRE FOR TUMOR DISEASES

HEIDELBERG, GERMANY

The National Centre for Tumor Diseases (NCT) in Heidelberg is a joint project between the renowned University Clinic Heidelberg, the German Cancer Research Centre (DKFZ) and the Deutsche Krebshilfe. The new facility will offer a range of spaces for interdisciplinary medical treatment and cancer research in providing a comprehensive focal point for people suffering from cancer, addressing their concerns and developing individual therapies for each case.

The new building will be characterised by a light and warm ambience deliberately avoiding a hospital-like atmosphere and increasing the comfort levels for patients, their relatives, visitors and medical staff. The light-filled atrium is the heart of the facility serving as the central communicative hub. Here the unique room geometry is further animated by the diverse daily patterns of use.



RIVERPARC PITTSBURGH

PITTSBURGH, PENNSYLVANIA USA

The Pittsburgh Cultural Trust aim is encourage residents to move back to the city with an urban rejuvenation project called RiverParc – an ensemble of flexible, mixed-use buildings on six acres. With seven hundred residential units offering varied forms of urban living and mixed uses facilities, the development will contribute to the future life of the city. Each residential block within it will have a distinct identity, which respects human scale, provides individual addresses, and contributes to a much improved public realm.

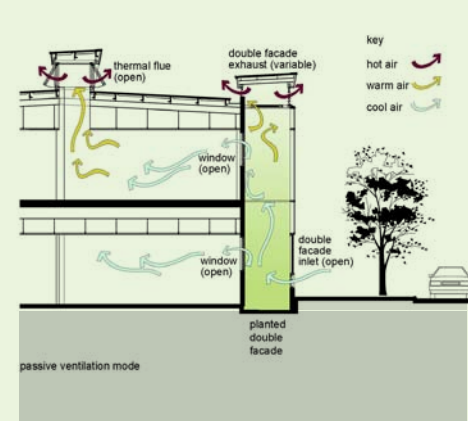


TORQUAY POLICE STATION

TORQUAY, VICTORIA AUSTRALIA

Located at the edge of Torquay this police building explores the integration of the *natural and built landscapes* and the use of double facades in the Australian context. Building skins combine to alter the perceived scale and visual depth of the building facade while simultaneously performing climatic and acoustic modification and enhancing security.

Screen-printed patterns on the eight-metre high glass façade are manipulated to provide sun-shading bands for the adjacent west facing windows. The image is an abstract reference to the weather patterns experienced in this coastal location while boldly expressing a sense of transparency and accessibility.

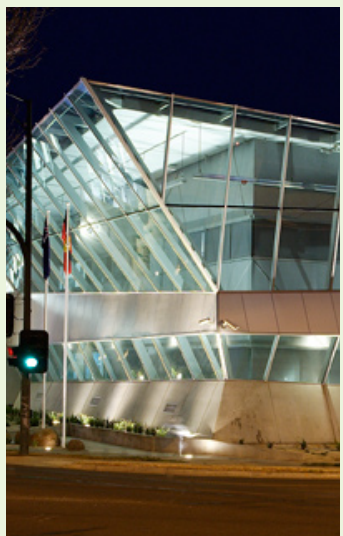
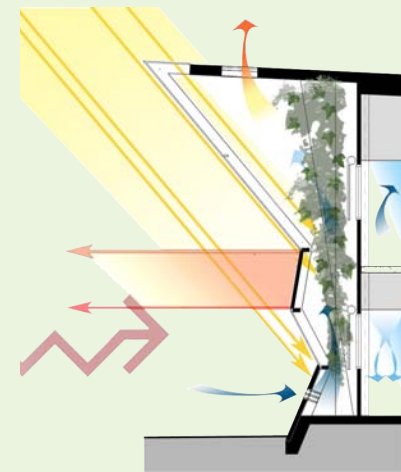


BENDIGO POLICE STATION

BENDIGO, VICTORIA AUSTRALIA

The new Bendigo Police office building, located on a prominent corner site on the main road into the city, required an institutional building that responded to the wider regional context and was visually assertive in the public realm.

The building powerfully addresses the two primary street elevations with its most prominent feature being the visually distinguished, inclined glass double façades. The double façade creates a controllable thermal buffer zone where windows can be opened to access clean air. This zone is planted with climbers supported on vertical wires to create a terrarium effect within the depth of the façade.



GENZYME CENTRE

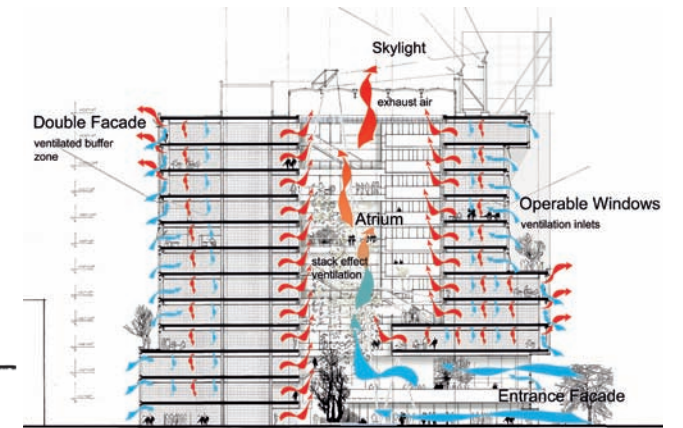
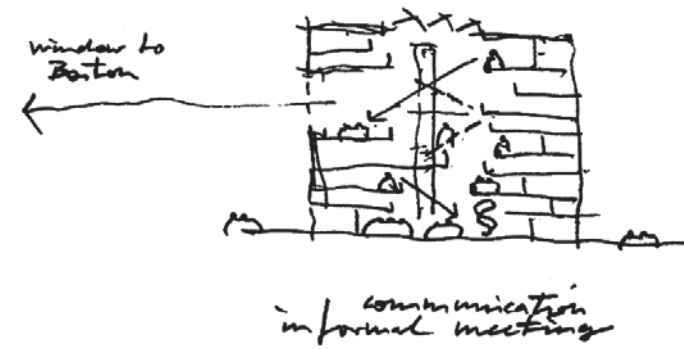
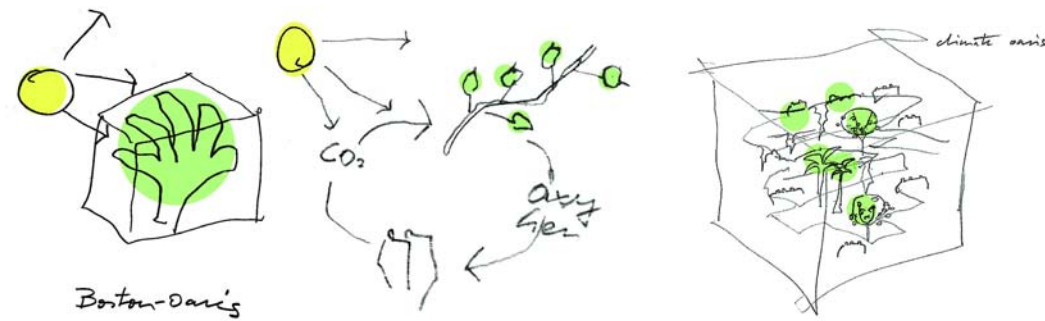
CAMBRIDGE, MASSACHUSETTS USA

The Genzyme Centre awarded the USGBC Leed Platinum Rating (equivalent to AGBC six star) represents a world best practice standard facility.

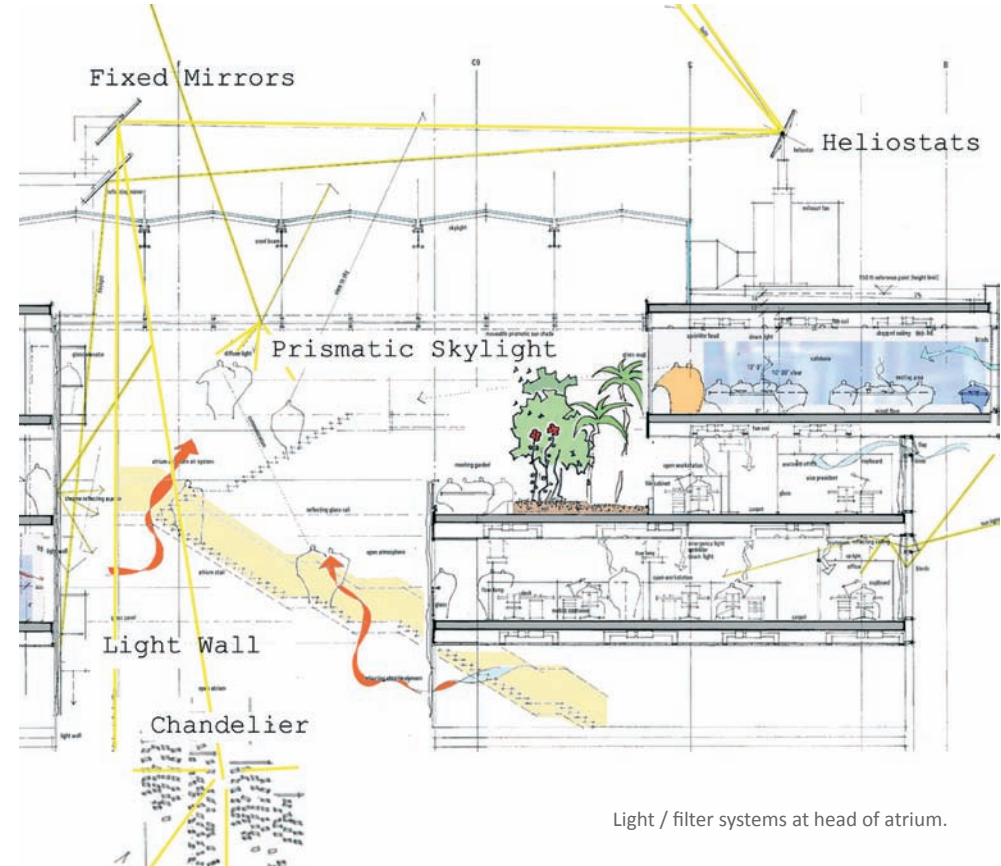
The architecture delivers a progressive building which represents a point of identification for the Genzyme Corporation, its employees, guests and visitors. The building accommodates approx. 920 individual workplaces over 12 floors. Commencing with the initial architectural competition and throughout a *highly integrated design* process the primary design objective was to develop a building from the inside out. Organised as a 'vertical city' with individual dwellings, *public areas and gardens* extend the full height of the central atrium.

The interior is flooded with daylight; all workstations are naturally illuminated through a combination of re-directional blinds at the building's perimeter and the top-lit central atrium. Above the atrium roof a sunlight redirection system with heliostats and fixed mirrors serves to enhance lighting levels still further. A prismatic ceiling beneath the skylights carefully filters the light before it is then dispersed into the interior of the building through reflective objects such as the sparkling chandeliers and light-walls. The atrium's role as a return air duct ensures that the chandeliers are, under the influence of thermal effects, constantly in motion, further enlivening the space.

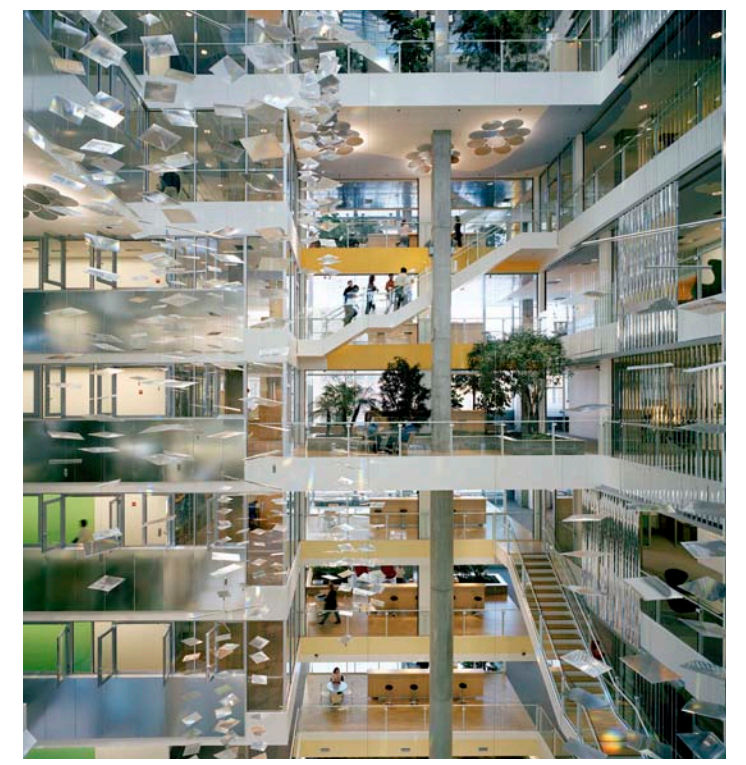
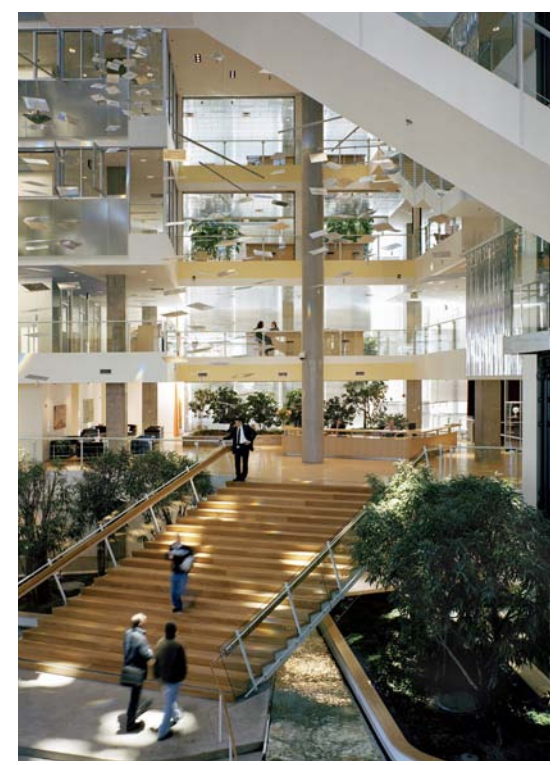
Incorporating vegetation, innovative day lighting techniques and passive ventilation the work environment created *reduced absenteeism* and *assists in delivering high quality research and corporate activity by attracting and retaining quality staff*.



Section: Air Movement, light reflection diagram



Light / filter systems at head of atrium.



LATROBE VALLEY JUSTICE PRECINCT

MORWELL, VICTORIA AUSTRALIA

This architectural landmark for the Morwell community and City of Latrobe presents significant growth and cohesion to the existing urban fabric. The new Latrobe Valley Justice Precinct defines Morwell's CBD and civic precinct while elevating Morwell's status as a regional centre now made distinct from the surrounding townships of Moe and Traralgon.

Located on an irregular shaped site of 12 800sqm, this 7,380sqm complex provides a successful urban design solution that was key to the scheme winning an invited competition.

The Complex required sensitivity for a small township streetscape, yet called for a commanding presence appropriate for important public buildings. Comprised of three public buildings with differing characteristics and separate address points, the integration of civic spaces was paramount to the success of the project.



INTEGRATED THERMAL MASS

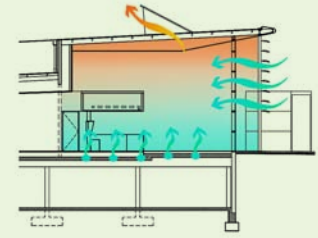
MOORABBIN JUSTICE CENTRE

MOORABBIN, VICTORIA AUSTRALIA

The sustainable approach to the design of this building has resulted in the delivery of the 'greenest' building to date for The Justice Department in Victoria. The design explores alternative environmental systems delivering a high performance building with public spaces that operate without mechanical air-conditioning.

A design feature of the building is the veil of sun controlling louvres that appear to float beneath the extensive eaves. The louvres allow sun shading yet provide reflected daylight into the lobby space ceiling while reducing glare. The night sky cooling system has been used only once before in Melbourne and is particularly suitable to the local micro climate. *The building demonstrates that a high performance public building can be delivered within an energy usage of 150 MJ/m² to 200 MJ/m².*

The successful integration of all the systems was a technically challenging and rewarding process for the design and construction team.



RAINWATER FOR COOLING



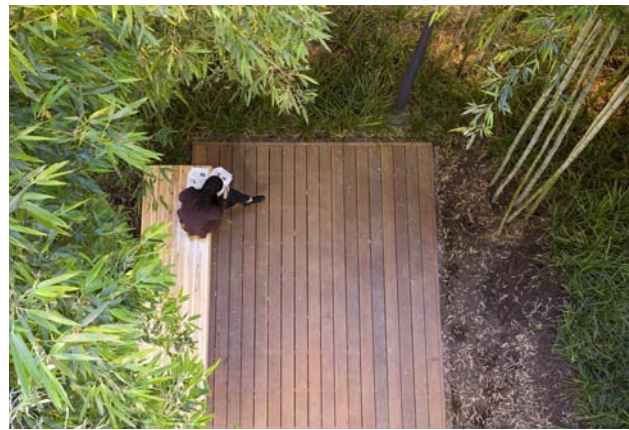
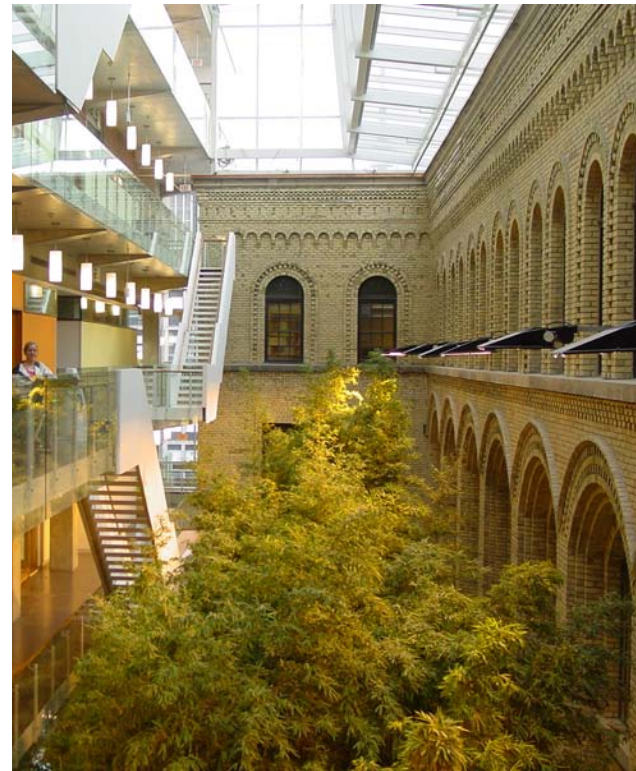
TERRENCE DONNELLY CENTRE FOR CELLULAR BIOMOLECULAR RESEARCH

TORONTO, CANADA

The University of Toronto and its affiliated institutions are acknowledged as world leaders in the quest to link genes to disease. *The architecture delivers a collaborative, interdisciplinary research facility*, the Terrence Donnelly Centre for Cellular and Bio-molecular Research (TDCCBR) allows some 400 diverse specialists to build on the University's strengths in bio-molecular research.

Flexibility, amenity and interaction inform all aspects of the progressive design. The laboratories are housed in a 12 storey transparent box displaying the process.

Elevated above a new public thoroughfare connecting the city to the south with the historic campus centre, Kings College Circle. This route is punctuated by the new public forecourt- flanked by the historic facades of the neighbouring University buildings - *with gardens, lounge areas, offices, seminar rooms and a cafeteria*. The modulated architectural language of this urban landscape deliberately contrasts that of the overlying box.



HOUSE OF THE FUTURE

IIT, CHICAGO ILLINOIS USA



Illinois Institute of Technology has similar goals to Melbourne University with regard to *faculty / industry involvement*. The cross-disciplinary design approach is summarised as follows:

The 'House of the Future' is designed to be the first *energy plus* building on IIT's campus. As part of their Sustainable Village project, Behnisch Architects and Transsolar collaborated with IIT Environmental Science Researchers and Architecture students to create a 'Living Room' for the Campus. Information exchange and presentations occurred in the form of monthly workshops and design seminars. The building industry was also included in the process as part of the overall strategy to engage in a cross-disciplinary discussion on sustainability.

A well-established and *innovatively nurtured industry-academia partnership* can be a win/win proposition in many dimensions and help both parties retain their leadership positions.

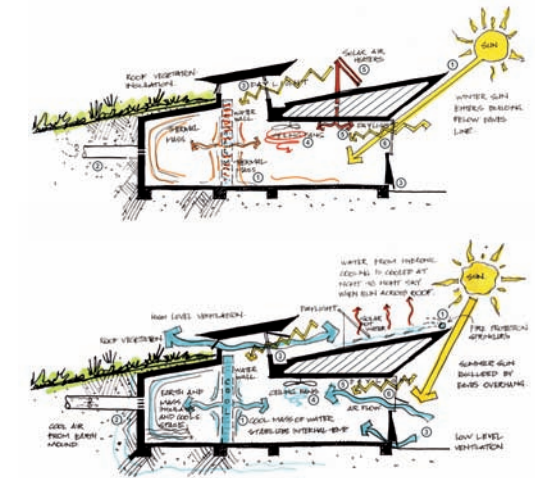
ANGLESEA DSE OFFICE

ANGLESEA, VICTORIA AUSTRALIA

The building is an exploration of 'green' core philosophy and is visually defined by its many integrated climate control mechanisms. These mechanisms harness the elements of earth, water, air and sunlight, in multiple energy conservation roles.

The most significant feature is the green-roof, covering the southern half of the building, which is balanced against the lightweight steel framed north and clerestory highlight roof cantilevers.

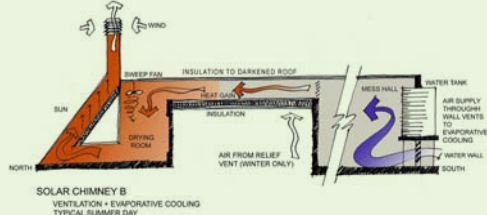
Designed to facilitate simple, environmentally responsible *climate control by users*, this building provides an environment unique among government offices - *the habitable space is completely devoid of air conditioning*.



CHUM CREEK

CHUM CREEK, VICTORIA AUSTRALIA

The Chum Creek building was designed by FMSA Architecture to be a flexible teaching space and to demonstrate building physics and behaviour through hands on operation of simple building systems by students. FMSA worked with the CSIRO to develop a practical application of a solar chimney with simple mechanisms. An integrated evaporative cooling system driven by passive systems teaches the students about thermal control. By operating control flaps, valves and shade awnings students can modify the internal environment.

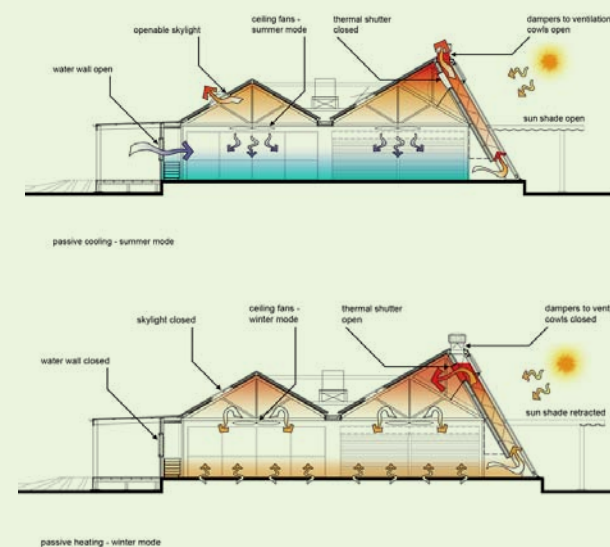


ST. LEONARD'S SUSTAINABILITY CENTRE

PATTERSON RIVER, VICTORIA AUSTRALIA

2008 United Nations Green Building Awards Winner
This educational building further develops the ideas of the Chum Creek facility and showcases the building as a laboratory of environmental systems. The architectural approach was to empower students to engage with, and modify how the building interacts with its environment. The architecture incorporates dynamic elements that encourage experiential observation, participation and analysis in flexible egalitarian spaces. Intelligent metering systems allow close monitoring of the energy production and consumption by students.

This architecture is predicated on the belief that we need to become reunited with the consequences of our actions.



AWARDS (Selected)

Behnisch Architekten, Stuttgart Behnisch Architects Inc., Venice, CA
Behnisch Studio East, Inc., Boston, MA

2008

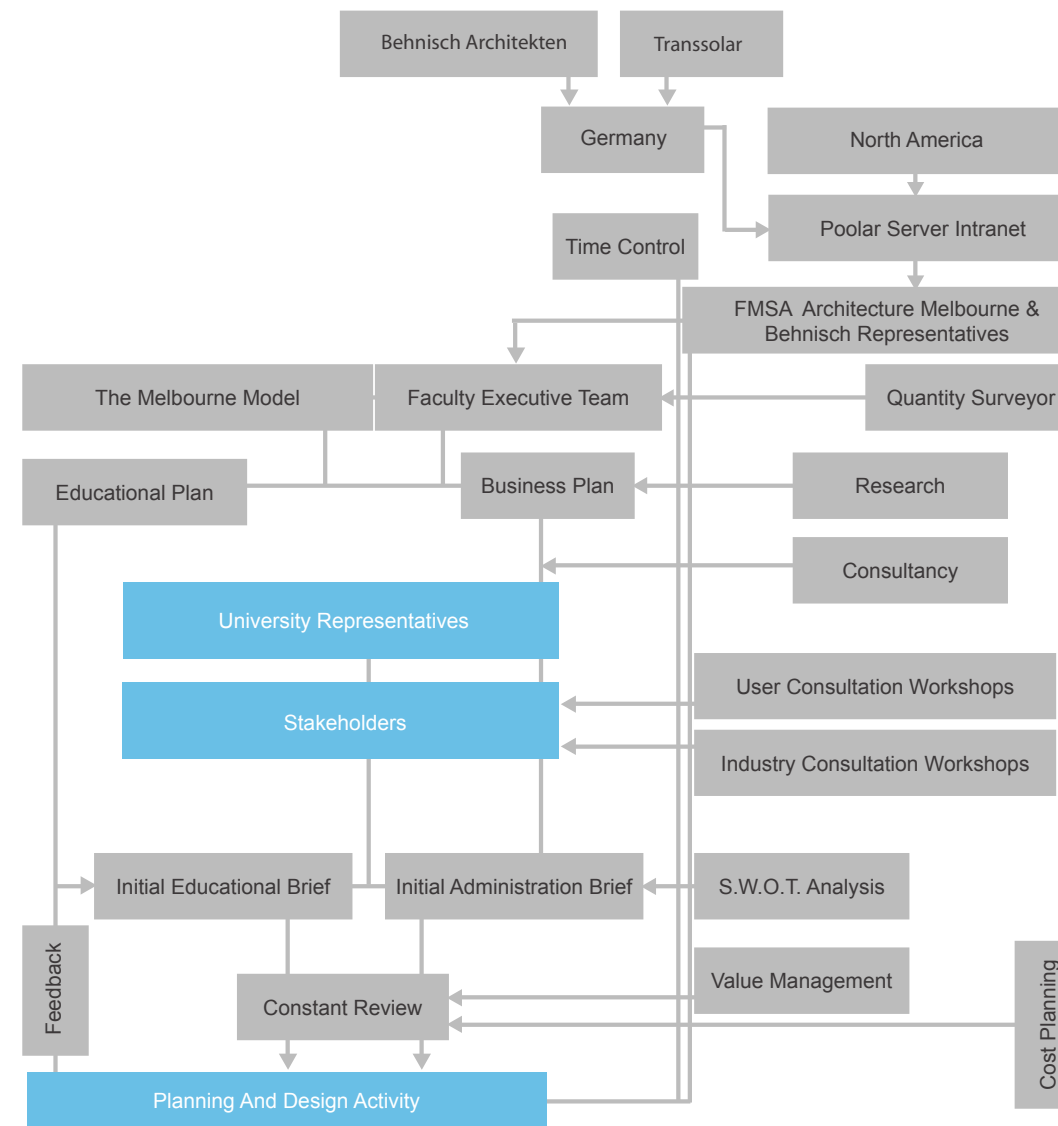
- Daimler AG headquarter building, Stuttgart, Germany
- (there were two 1st prizes; submissions have to be revised)
- Manfredonia New Waterfront Masterplan
- Laboratory, production and administration building for Wala, Bad Boll, Germany
- Comune di Ferrara Administration District Masterplan
- Law School for the University of Baltimore. Baltimore, USA
- New media building Schwäbischer Verlag, Ravensburg
- Hamburg School of Business, Hamburg, Germany
- City administration Roma Campidoglio 2, Rome, Italy
- Hollerstauden residential complex, Ingolstadt, Germany
- 2007
- Brooklyn Arts Tower, New York, USA (with Studio MDA)
- INSPI Health Campus, Malmö, Sweden
- BadenCarrée mixed-use complex, Karlsruhe, Germany
- Dürr Campus administration building, Bietigheim, Germany
- Lower Don Lands, Toronto -
- Lower Don Waterfront Revitalisation
- Design Team comprising Michael van Valkenburgh Associates (leader)
- Behnisch, Ken Greenberg Consultants, Transsolar & Green Eastern Ecology)
- New Housing New York Legacy Project in South Bronx, New York, USA
- 2006
- Schulauer Hafen – development of a former harbour district,
- Hamburg-Wedel, Germany
- Residential complex with club and guest resorts,
- Almaty, Kazakhstan(with Harder Stumpf Architekten)
- Three research buildings near Paris / Saclay, France (with BRS Architects)
- Flood Protection and Promenade HafenCity, Hamburg, Germany
- Unilever Germany Headquarters, Hamburg, Germany
- RiverParc (urban rejuvenation project) Pittsburgh, PA, USA
- (together with Concord Eastridge, architects Alliance and Gehl Architects)
- Harvard Science Complex in Allston, Boston, MA, USA
- Mixed-use complex Mežaparks, Riga, Latvia

Behnisch Architekten is published regularly in Architectural and popular press having in excess of 60 articles in the past decade. In the years prior to 2005 Behnisch Architekten was placed 1st in over 30 architectural competitions and succeeded with an additional 5 purchases.

METHODOLOGY

The methodology for this project allows for the engagement of all stakeholders including faculty, students and industry.

- 1st prize
- 1st prize
- 3rd prize
- 1st prize
- 1st prize
- 3rd prize
- 3rd prize
- 2nd prize
- 2nd prize
- 1st prize
- 1st prize
- 1st prize
- 3rd prize
- 1st prize
- Runner-up
- Purchase
- 1st prize
- 1st prize
- 2nd prize
- 1st prize
- 1st prize
- 1st prize
- 1st prize
- 1st prize



CAPABILITY AND PROCESS

The office of FMSA Architecture is based in Melbourne accomodating in excess of 50 staff. Collaborating with Behnisch Architecture and Transsolar brings together both North American, European and local knowledge providing formidable analytical capacity and focus for what will be a new world class building for the Faculty of Architecture, Building and Planning.

All offices are connected via high-end internet connection including a fall-back facility. External project communication is handled by a web-based project data exchange server. This 'Poolarserver' is hosted in-house and is completely integrated in the office intranet. We provide each project with a separate and secure web-based, user-friendly project management platform to all design team members; this may be extended to include client, external consultants and contractors.

The individual practices have track records of successfully delivering projects of similar complexity and scale. It is proposed that representatives from Behnisch Architecture would be hosted in the offices of FMSA for the duration of the project.

The composition of our team and our shared holistic approach will help us design solutions that meet the unique, interdisciplinary challenges of the new School of Design. We share the Faculty's conviction that high quality, iconic design can be realized without depleting or harming our natural resources.

We consider the lifecycle costs of solutions throughout the design process, a strategy that may lead to higher investment in systems for insulation, glazing, energy collection, and shading but also to substantial reductions in mechanical and electrical systems, maintenance and operation costs. Programmatic and contextual functions overlaid with climatic and energy functions will serve as a starting point for the creation of an architectural identity whose expression, functionality and sustainability are an innovative synthesis rather than competing elements.

AWARDS FMSA Architecture (Selected)

2009

- Moorabbin Justice Centre*
- Winner - South Eastern Awards - Outstanding Sustainable Building
- 2008
- St Leonard's College Sustainability Centre*
- Winner - Szencorp United Nations Association Green Building Award
- Anglesea DSE Office & Depot*
- Runner up - Szencorp United Nations Association Green Building Award
- Moorabbin Justice Centre*
- Commendation - Idea08 Interior Design Excellence Awards
- Bendigo Police Station* - Shortlisted - Dulux Colour Awards
- Mount Hotham Ticket Hall* - Shortlisted - Dulux Colour Awards
- Ducati City Showroom* - Winner - ASI Retail Showroom Fit-out
- 2007
- St Leonards College Sustainability Centre*
- Outstanding School Facilities - CEFPI Award 2007 Victorian Awards
- Snowy River School - Marlo*
- Minister's Commendation - School Design Awards
- Outstanding School Facilities - CEFPI Award Victorian Awards

REFEREES

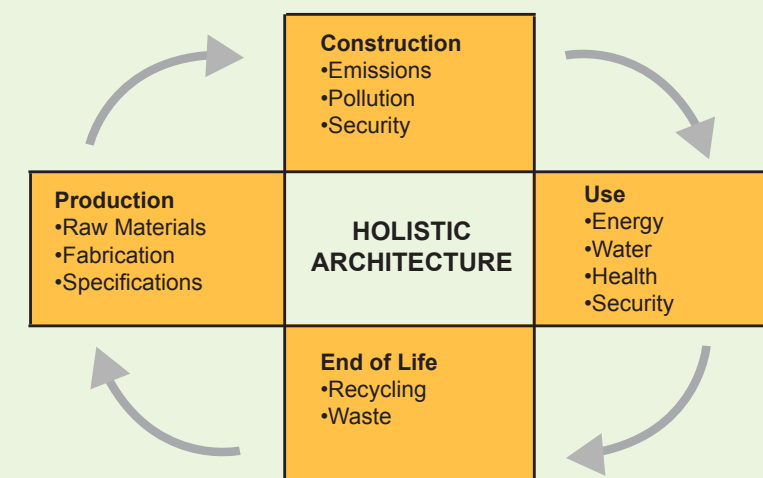
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FMSA REGISTRATION WITH LOCAL BOARDS / AUTHORITIES

Architects Registration Board Victoria : C035
Master Builders Asscoiation Victoria Reg No: 6902
Builder Practitioner No. (Domestic): DB.U 12174
Builder Practitioner No. (Commercial):CB.U 1912/1943



SOURCE OF ENVIRONMENTAL IMPACTS in each phase of the building cycle

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