SHAC 09
Sustainable Habitat Challenge

Ten tertiary-based teams will design and build or retrofit more sustainable housing by October 2009.

Collaboration, Communication, and Innovation.
SHAC Team Tasks:

• Develop a vision of more sustainable living
• Design and build a more sustainable home
• Work in a team of students, tertiary staff, and practicing professionals. Regional Collaboration.
• Final report giving reasoned arguments in each judging category showing improvement over how we live today
• Communications Campaign to explain:
  • Design possibilities to the general public
  • Implementation details to the design community (builders, architects, engineers)
Barriers to more sustainable housing

- Market Demand
- Industry Capacity
- Big system with many actors
- Lack of shared understanding around possibilities for implementation
Tertiary Orgs and students

• Tertiary capacity for training is deep but not broad
• Tertiary organisations are not used to large collaborative projects
• Not all knowledge about building within academia

• Tertiary Orgs can take on more risk
• Tertiary Orgs can afford more R&D
• Tertiary Orgs part of national and international network
• Motivated students will teach you a lot, and help build enthusiasm
• Students like networking and collaboration
Industry and the design community

- Risk of R&D is perceived to be high for industry with many small operators
- Industry not quite yet demanding graduates with skills or qualifications in sustainability
- Industry can deliver large projects
- Familiar with practical issues
- Some state of the art practices only common knowledge within industry
Public

- General knowledge about more sustainable options for residential housing is low in public
- Sustainability seen as hyperbole

- Public desire for sustainability much higher than in recent history.
• Traditional approaches will not give the needed change. (Brezet 1997 in Gaziulusoy 2007)
Methods – National Tertiary Challenge

• Motivation through competition. Comparison of outcomes
• Visionary targets
• Collaboration—Tertiary Orgs, Industry, Local community
• Collaboration—Engineers, Builders, Architects, Designers
• Facilitated communication
• Encourage diversity
• Encourage exploration via a cycle of thinking and doing
Motivation through Competition

• Sponsoring Institution: Otago Polytechnic
• Establish overall Vision, Find Funding (MfE SMF)
• Provide “Challenge” competition format
• Establish governance, judges
• Offer prizes
• Support teams
Visionary Targets Set the Direction

• Assemble steering committee, to develop general targets
  • KAREN Access.Grid video conferences
  • Auckland, Vic, Canterbury, Otago

• Learning:
  • Steering group members should be in a position to champion/mentor/supervise the project in each likely institution
  • Knowledge base in different across disciplines
Encourage Collaboration, Communication, Diversity

• Video conferences among teams
• Rules require collaboration
• Visionary, but not detailed targets produce a range of responses
• Frame research and practice as “exploratory”, and
• Require outputs so as to force an immediate “best shot” rather than perfection
• Publish interim reports: knowledge sharing + horse race effects
• Help everyone see that they are working on a shared project. Video conferencing helps show students what is going on elsewhere.
• Newsletter
• Distribute press releases and contacts to teams to distribute
• Disseminate outputs in an easy to understand form
ENERGY: No net non-renewable energy consumption is required by the house and site

WATER: Mains water requirements and water leaving the site as waste are minimised

MATERIALS: All the materials are re-used, recycled or made from renewable resources. Building materials are durable, typically they will last long as or longer than it will take to grow or produce those resources again. All materials are made entirely from materials grown or manufactured in New Zealand.

WASTE: Development does not adversely affect the environment or increase the environmental loadings and pressures of waste, wastewater or stormwater.

SHAC 09 Targets:
Energy, Water, Materials, Waste
SHAC 09 Targets: IEQ, Affordability and Suitability, Sustainable Community

- **INDOOR ENVIRONMENT**: The design of your home allows you to maintain a healthy indoor temperature all year round, with no additional energy for heating or cooling.
- **AFFORDABILITY**: The house will be affordable for its market. The occupants will be delighted by the house, its size, cost, and features.
- **SUSTAINABLE COMMUNITY**: Supports well-being, good quality of life, and healthy local environment today and into the future. Development does not adversely affect the environment or increase pressures.
Project Outcomes

• Collaboration within tertiary institutions
  • Architecture, Building, Engineering, Film, Communications

• Collaboration between tertiary institutions
  • Universities, Polytechnics

• Collaboration with industry
  • Regional and National industry partners

• Staff competence raised. Project focused staff research to the task at hand. Their research has inspired them to integrate into the coursework.
Project Outcomes...

• 10 Design Reports on what teams did and how they made progress in judging categories.
• National film interest: Short 2 minute films distributed on web
• 10 Case Study Houses - Explorations
• Reports to Govt on barriers encountered
• Book on Challenge projects and Team Stories
Team Canterbury

Christchurch Polytechnic
Builds 12 timber framed houses a year to train young builders

UC, - Thermal, Mech Polytechnic, Arch, Structural
Lincoln – Social, Horticulture
Unitec Team to retrofit Rangitoto batch
Team Dunedin
Zero Plus
Thank You!