

INTERNATIONAL ECOLOGICAL ENGINEERING
CONFERENCE

26-29 NOVEMBER 2001, LINCOLN UNIVERSITY, NEW ZEALAND

Eco-City Farm Workshop

*Co-hosted by the Christchurch City Council
&
the Swampy Flat Revolutionaries*

*Facilitator - Chris Freeman (CCC)
Chairperson - Murray Griffin (SFR)*

*Attended by:
Julia Tuineau, Steve Hart, John Norton, Richard Webster, Elliot Duke, Lily White & Jason Arnold*

WORKSHOP ONE

Setting the Scene

Workshop Focus

A New Urban Park for Christchurch

A Sustainable Christchurch

Murray Griffin presented the Christchurch City Council's commitment to "a sustainable Christchurch" as the overarching principle for the workshop. In brief, the City Council seeks to become "*an exemplary example of how an organisation can... encourage and lead other businesses and organisations to join the Christchurch City Council in becoming case studies for sustainable practices.*"

Based on this position, the workshop addressed the urban park's development and the proposed Eco-City Farm proposal as an ideal case study of the City Council's commitment to a sustainable Christchurch.

The Site – History, Scale & Characteristics

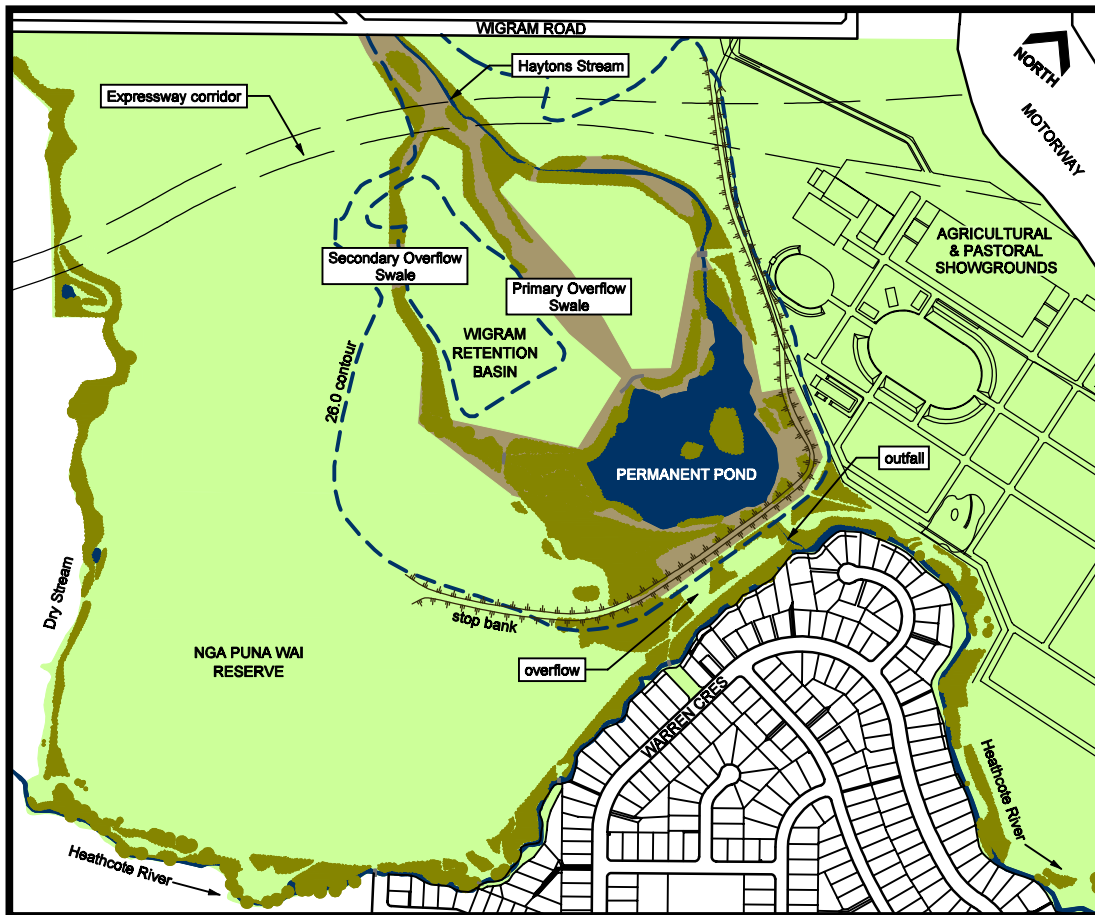
Chris Freeman provided an overview of the Urban Park site highlighting the following aspects:

- The history associated with the A & P show
- The history of the site as an agricultural / farming area
- Important rural – urban characteristics to the site
- A range of existing uses on the site that need to be accommodated in any planning
- An even more diverse range of possible users of the park in the future
- An existing budget of approximately \$135k for the servicing of the site
- Good soils over the majority of the site
- Important ecological features particularly the waterways associated with the site
- Wigram retention basin as a important feature to consider in planning the park

The Urban Planning Context

Chris then highlighted the significant issues, and opportunities, to consider in terms of the urban expansion that will occur around the site over the next 10-20 years. They include:

- The Wigram and Aidenfield housing developments neighbouring the park
- Potentially 20,000 more people living in this part of Christchurch in twenty years
- The proposed expressway running through the western boundary of the site
- The need to provide access to the local population to the park
- The need to protect and buffer the ecological margins of the park from neighbouring development and users of the park.



Nga Puna Wai Eco-City Farm

Two Aspects of the Vision

The proposed Nga Puna Wai Eco-City Farm is founded on the principles of permaculture, appropriate technology & ecological engineering.

Nga Puna Wai Eco-City Farm supports an integrated management & planning approach to the new urban park's development.

Two Features of the Proposal

- To create a working farm as a feature of the urban park and a resource to local communities.
- To establish a Open Classroom (will this be seen as competing with existing institutions with the "same" brief?) offering a community based research & education as part of the Eco-City Farm to support collaborative multi-level research focused on the Canterbury region. Proposed programmes to be established at the centre may include:

The Open Space Classroom (targeting community, primary & secondary schools)

*Regional Food & Fibre Production
Regional 'Lifestyle' Block development & sustainable small farm management*

Possibilities – Products & Principles

Jason Arnold presented a range of identified possibilities for the eco-city farm.

All produce will be grown organically using permaculture as a guiding principle. Produce is likely to include:

*Vegetables, Grains, Seed, Fruit, Berries, Nuts,
Timber, Fibre, Cabbage trees, Flax, Raupo, Manuka,
Wine, Heirloom crops, Heirloom seed production*

Plantings should avoid monocultures and provide examples of retaining soil structure, mineral and nutrient content while providing intensive cropping results.

Lincoln's BHU experimental and highly successful methods could be used as a model

Using permaculture (and the vision of biodiversity enhancement) as a guiding principle, native plants should be used as hedgerows and shelterbelts as a means of shelter, spatial division and landuse identification.

Possibilities -Projects & Programmes

- *Education and work space for Christchurch Polytechnic's Seven Oaks Organic Growing programme*
- *Production of alternative building materials (straw, flax fibre, et al)*
- *Alternative/ appropriate design and building company*
- *Community supported agriculture*
- *Retail space for produce and natural household consumables*
- *Resource centre for alternative energy, wastewater, building, lifestyle information and products.*
- *Development and research on new crops suited to the region*
- *Herbs for medicinal/ health production*
- *Co-ordination of value added production eg enabling information flow around specific groups to combine resources and develop new products and markets.*
- *Tourism potential as a visitor attraction*
- *Art and craft from both recovered materials and sustainably harvested materials.*
- *Resident craftspeople and artists*
- *All accommodated in appropriate buildings using healthy materials, passive solar and zero emissions*

Permaculture Principles Applied

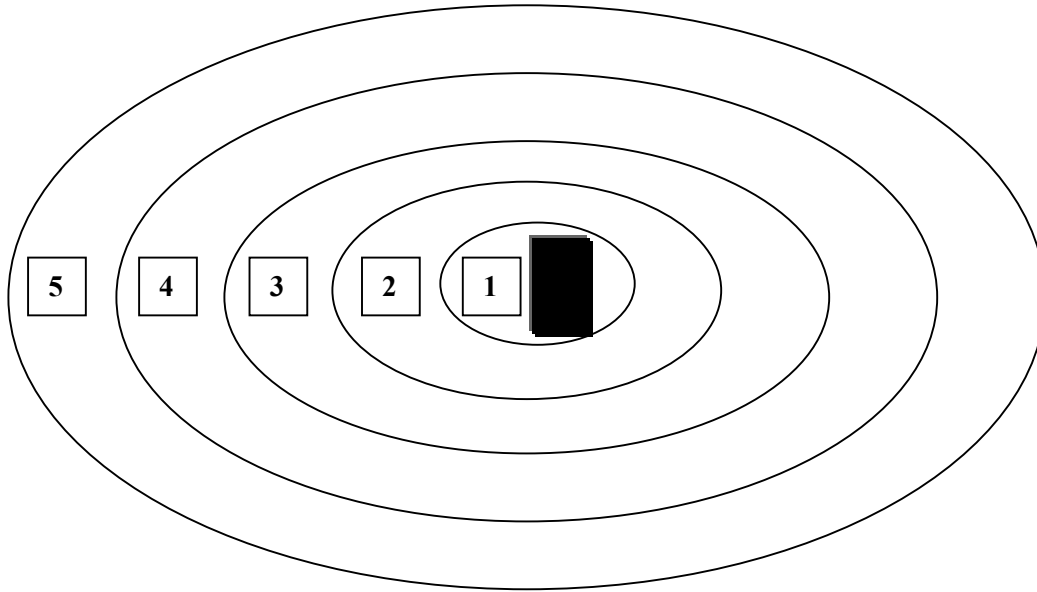
Lily White presented an overview of the "Zone Plan" for the proposed Eco-City Farm.

The zone plan expresses how the principles of permaculture could be used to establish the farm. One benefit of this plan, is the capacity for the farm to relate to the lifestyles of both urban and rural people.

The zone plan highlights what can be grown on very small plots (eg: small central city sections) through to significantly large land areas (eg: rural lifestyle blocks).

Eco-City Farm ‘Zone Plan’

Based on the principles of permaculture.



The Zones

■ Zone Zero – Green Building Concepts

<p><i>Design</i></p> <p>Low environmental & visual impact Site specific and of appropriate scale Closed loop systems (for inputs & outputs)</p>	<p><i>Energy</i></p> <p>Passive solar design Sustainable energy systems Energy efficient appliances</p>
<p><i>Materials</i></p> <p>Renewable & sustainable resources Sourced locally Non Toxic Durable Recycled &/or recyclable Low ‘embodied’ energy Multi-functional</p>	<p><i>Water</i></p> <p>Rainwater harvesting Waste-water recycling Water efficient fittings and appliances</p> <p><i>Waste</i></p> <p>Reduce, reuse, repair & recycle Nutrient recycling and recovery Waste = resources</p>

Zone 1.

Clipping keyhole beds and intensive veggies

- maximize use of space, providing easy access to plants
- inhibits straight rows (discourages build-up of pests)
- plants that are constantly harvested (eg: silverbeet, lettuce, brocolli)

Herb Spiral

- 2m diameter x 1m high earth spiral accommodates all necessary culinary herbs
- creates all different microclimates needed
- can be watered with one 2m sprinkler with no water wastage
- gives 9m of planting space

Community Gardens

- space for community groups to gather grow food for community use, enhance the environment, share information and get to know one another

Children's Nibble Garden & Play Area

- with plants that can be picked and eaten straight away

Zone 2.

Broad scale veggie gardens

- crops that we need more of and more space to grow (eg: potatoes, corn, pumpkins, garlic, onions, carrots)

Chicken Tractors

- made to fit broad scale beds
- chickens used to turn over the soil, eliminate pests fertilise the ground ready for the next crop

Food & Fibre Processing

- on-site, value added productions (eg: household herb based cleaners, flax paper, oils)

Zone 3.

Intensive fruit & nut systems

- orchards underplanted with diverse herbal ley

Chickens, Bees, Ducks & Geese

Zone 4.

Self foraging systems for large livestock (eg: cows, pigs, sheep)

Large trees for shade & fodder (eg: tagasaste)

Zone 5.

Wilderness - self maintaining systems (eg: native bush)

WORKSHOP TWO

Identifying Issues of Focus

Feedback on Issues

Innovative Networks

- **Local partnerships**
 - existing & future tenants
 - sports & passive recreation
 - special interest groups
 - existing & future neighbours to the park
- **Wider networks – City Wide & Rural Canterbury**
 - Tangata Whenua
 - Tranzit
 - associated community Organisations
 - associated research & educational organisations / institutes
 - associated industry organisations (rural & government sectors)
- **An innovative management structure**
 - To create a sustainable urban park will require an innovative management structure & effective integration with the City's growth.
 - A Management 'network' to assist in determining how the park evolves

Large-scale Big Pictures Plans

- **Using A&P site as a resource**
 - sports amenities clustered to maximize use & efficiency of servicing
 - Riding for the Disabled / pony clubs an example of an opportunity to work with a group of users to establish sustainable practices
 - alternative technologies for lifestylers – part of the educational and productive potential of the park / city farm
- **Permaculture Area**
 - permaculture as a means of integrating colonial heritage with NZ ecology?
 - a research & education centre located in the park
- **Wigram Subdivision**
 - linkages with the Wigram housing development will expand the scope of the sustainable urban park concept
 - social / environment / economic analysis of relationships between Wigram and the urban park
 - mixed social groups within the development a desired outcome
 - Wigram stormwater catchment an important ecological consideration

- **Ecological Corridors**

*This discussion was based on input from **Colin Meurck**, who addressed the significant ecological issues associated with the site. Colin emphasised the value of the park as part an ecological corridor through the City and, more importantly, as an ideal location for re-establishing a tract of native bush of suitable scale to support ecosystem development within the city.*

- stepping stones between Addington Bush / Halswell Quarry / Riccarton Bush / West Corridor to Waimakariri River / Port Hills
- 4-10 ha native vegetation every 5km, 1 ha reserve every 1km
- urban design in harmony with indigenous landscapes using native revegetated corridors to define urban fabric
- defining the ecological corridors that permeate the park (ie: water, native plants, wind, sun)
- and for the catchment outside the boundaries of the park: where are the slopes, swales, winds
- use corridors to define uses (eg: wind funnel for power generation, determine permaculture areas/ zones)

WORKSHOP THREE

Action Planning

The following three issues were put forward as the focus for the final workshop. The City Council's commitment to a sustainable Christchurch was revisited as the basis upon which the urban park and the eco-city farm could be mutually addressed. Consideration was then given to the guiding principles that would assist the park's planning and management. The final focus of the workshop was directed back to the Conference focus on ecological engineering. Consideration was given to the immediate and future application ecological engineering to the park's development.

A Sustainable Christchurch

A commitment to the urban park as *"an exemplary example of how an organisation can... encourage and lead other businesses and organisations to join the Christchurch City Council in becoming case studies for sustainable practices"*

An Urban Park in Context

Establishing **guiding principles** to guide the urban park's development in the context of Christchurch & Canterbury's growth.

Applying an Ecological Engineering Perspective

Applying the principles of Ecological Engineering to the development of the new Urban Park

Guiding Principles

The following principles were put forward to illustrate how the urban park's development may be assisted by sustainable guidelines.

Integrated Planning & Management

- An integrated planning, design & management approach to the Park & the urban context
- A commitment to closing loops on site
- Enhance the natural forms and connection within & with the Park
- *"Measure to Manage"*

Collaborative Partnerships

- To facilitate partnerships with stakeholders in the Park's evolution
- Partnership based on local, district, regional, national & international collaboration

Sustainable Principles Applied

- To use & showcase appropriate technologies on site
 - "Parchitecture"*
 - "Environmental recreation"*
- To establish and promote the Park as a venue for sustainable research, products & produce

Ecological Engineering Applied

- **Audit the Environmental, Social & Economic dimensions of the Park**
 - stormwater
 - water
 - energy
 - building construction & materials
 - transport
 - maintenance systems & staffing
 - sustainable landscapes

- **Existing features of the Park to be Audited**
 - waste from Saleyards \$14k/yr
 - water supply \$12k/yr
 - maintenance \$45k/yr
 - staff \$40k/yr
 - power \$23k/yr

Total: \$134k/yr

- **Integrating sustainable ‘satellite’ technologies to the management of the park**
 - enhanced soil infiltration (eg’s from Conference – Densen, Moodie)
 - living water / machines (eg’s: Universarium – Gotenburg, Pyramid – Romania, Denmark)

- **Appropriate technologies used in the Park - “Parchitecture”**
 - eg: Riding for the Disabled building (80x20m) could be constructed using straw bale construction and water saving / recycling technologies
 - Any new park buildings would follow this precedent

- **Integrating systems with the growing neighbourhoods surrounding the Park**
 - Wigram & Aidenfield housing developments

- **Facilitating the ecological connections within & with the Park**
 - ecoducts – ecological corridors
 - pedestrian / cycleways developed as part of transit network with Park and neighbourhoods
 - appropriate planting

Action Plan

The following priorities and steps were identified as the basis for moving the sustainable vision for the new urban park forward in 2002.

- A & P negotiations – take along as part of the vision
- Environmental Audit – *measure to manage*
 - implement a triple bottom line analysis
 - develop a stakeholders list
- Co-ordinate a key forum group
 - composed of representative sectors / organisations / groups
- Budget forecast & review for the management, maintenance and development of the park
- Educational cluster – community, primary, secondary, tertiary
- Research cluster – CRIs, Universities, Polytechnic & other research agencies
- International links – to build education and research support (eg: International Ecological Engineering Society)
- Agribusiness – involving the sector in the park & eco-city farm development
- Appropriate Technology / Organic Produce warehouse

- Christchurch City Council as the facilitator not the funder
- NGOs - OGCT, AT/Permaculture Group, Small Farmers, NZ Nature Farming Society, Soil and Health Society, other.....

Next Steps

- **Develop guiding principles – CCC to facilitate**
- **A forum of stakeholders in the New Year to develop this focus**
- **A ‘sustainable’ strategic plan to guide the process / establish a critical path**
- **A promotional plan based on this vision and process to be prepared over the next 6-9 months**