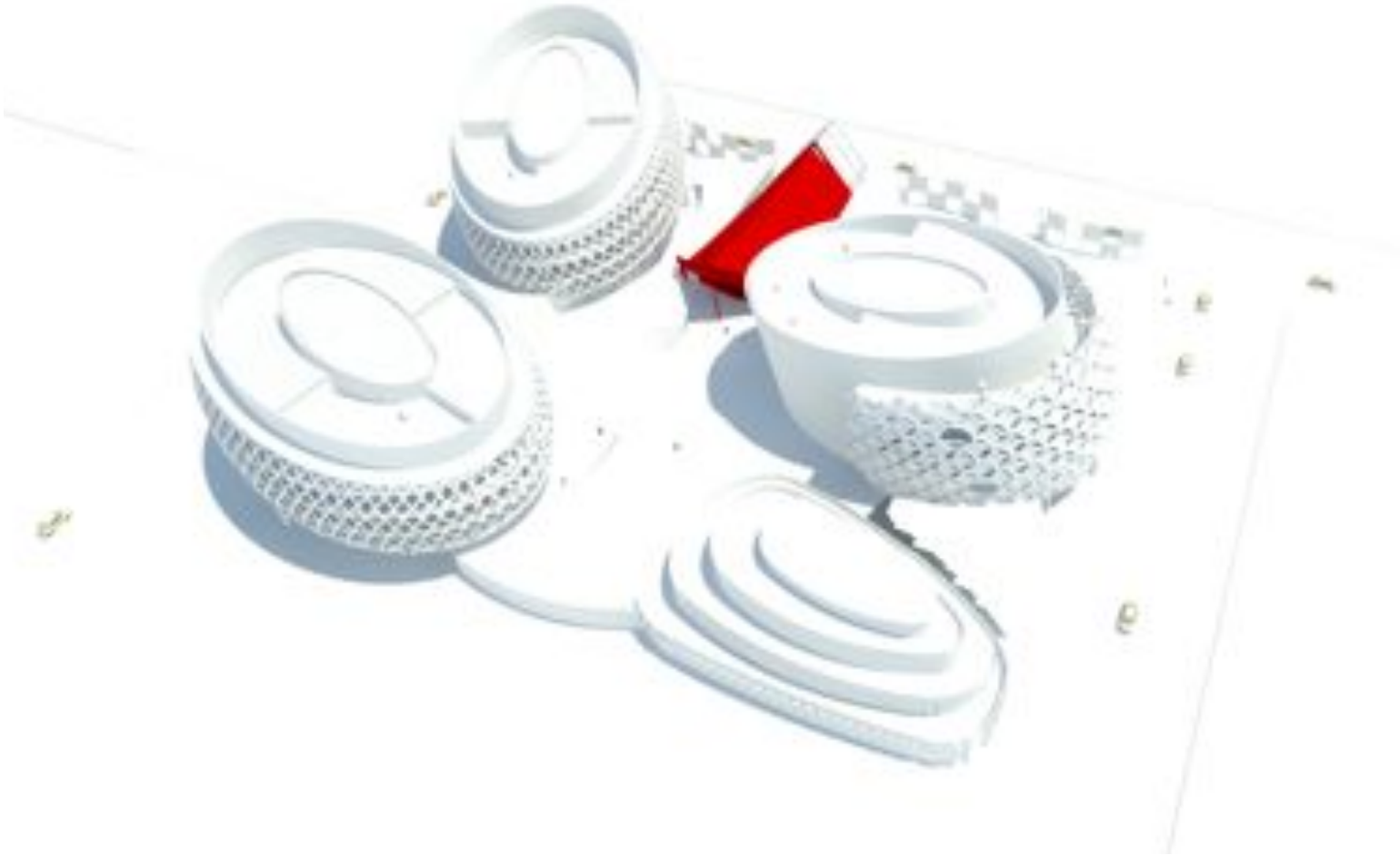
“Mai te puku o te tuna, mata ki te hono o te tere.”

(from the belly of the eel, we see its path; past, present and future)



A proposal for a new urban development for Christchurch CBD

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Glossary:

mauka: *mountain*
awa*: river*
takata*: chief*
Ōtautahi: *Christchurch*
iwi: *tribe*
repo: *swamp, wetlands*
whenua: *land*
hā: *breathe, breathing*
kotahitanga: *unity, holistic*
tawhito: *past, ancient*
tuna: *eel*
Hinaki: *eel trap/net*
hā ki roto: *inhale*
tikanga: *protocols, procedures*
wai: *water*
tangata: *people*

Te Taiao: *the environment, elements, etc.*
Kōtuitui: *interlink, connect*
hono: *join*
huri: *turn*
whakakohikohi: *collect, gather*
tipu: *grow*
Onāianei: *the present*
hā ki waho: *exhale*
kaitiakitanga: *sustainability*
whakahoki: *return, give back*
Mauri: e*nergy, essence, life force*
Ā mua: *future*
mai te whenua: *from the land/ rubble*
manawatanga: *purity and integrity*
manaakitanga*: community*

Objective

To construct an innovative and sustainable urban living environment inspired by the local Canterbury landscape, sustainable ecology and a strong bicultural element encapsulating both Māori and Pākehā world views.

Core inspirations:

Local environment - Rohe:
Project Cross Over will reflect both the modern cityscape of Christchurch CBD and the historical landscape of the wider Canterbury Plains.

Biculturalism – tikanga-rua:
At its core this project is a reconciliation between Ngāi Māori and Ngāi Tauiwi (Kiwi) worlds drawing on essential life values from each of these integral worlds to New Zealand.

Sustainability - Kaitiakitanga:
The inhalation of natural elements will include water, air, solar energy, thermal gain, local cultivation and the generation of positive carbon emmissions. Essential to this project will be the innovative re-intergration of earthquake debris (buildings) into the construction of the dwellings.

Matauranga Maori Methodology

The local environment was originally a wetland and swamp rich in resources and food. These wetlands were the lungs of the land allowing it to breathe and bring about rejuvenation. The concept of breath, its inhalation, diffusion and exhalation is central to the project development methodology.

INHALE | DIFFUSE | EXHALE

1. **INHALE** is reflected in the following descriptors **Hā ki roto: Tawhito**

- Tikanga : Kaupapa - Design Philosophy
- Wai + Whenua- Land, the site.
- Tangata- People
- Te Taiao- the environment, elements, etc.

This is ultimately explored in the local wetland ecology fed by the tidal flow, where water and land meet.

2. **DIFFUSE** is represented by **Kōtuitui: Onāianei**

- Hono - connect
- Huri- shift, turn, transition.
- Whakakohikohi- collect, gather together.
- Tipu- to grow, incept, inspire.

The circulation of life in the wetlands is represented by the tuna-eel which seasonally inhabits the waterways enriching the ecology but also providing a sustainable food source for the community. Tuna are the inhabitants of the wetland much like the people of Ōtautahi are the inhabitants of this unique landscape.

3. **EXHALE** encapsulates **Hā ki waho: Ā mua**

- Harnessed life flow
- Huri- shift, turn, transition.
- Release
- The communal life force

The iconic concept of the **'Hinaki'** – the eel pot establishes the design principle and fits into this once wetland and swampy environment of Ōtautahi Christchurch. **'Hinaki'** is woven out of wetland plants into a basket to allow water flow, ventilation, capture tuna-eel, and provide a bountiful resource for the life of the community.

1 WHENUA + WAI

2 TUNA

3 HINAKI

Reflect the Natural Landscape of Christchurch – Whenua
Wetlands – Are the Lungs of the Land – Allow the Whenua to **BREATHE**

FORM

FUNCTION

WAIREPO

INHALE	DIFFUSE	EXHALE
PEOPLE	CONNECT	COMMUNITY
SUN	CONVERT	ENERGY
RAIN	COLLECT	WATER
WIND	UTILISE	VENTILATION
SEEDS	GROW	FOOD
NATURE	INSPIRE	LIFE

The central elements of INHALE, DIFFUSE, and EXHALE will inform the design, construction, and completion of Project Cross Over.

Additionally, the project encourages the adaptation of the following percepts to inform the design

- Mai te whenua -from the rubble
- Kaitiakitanga - sustainability
- Manawatanga- purity and integrity
- Manaakitanga – hospitality
- Hapori – community

Environmental Objectives

The Living Building Challenge, the Passive House Standard and the Building Biology and Ecology Institute

With a goal to increase awareness to tackle critical environmental, social and economic problems, such as: the rise of persistent toxic chemicals; climate change; habitat loss; the collapse of domestic manufacturing; global trade imbalances; urban sprawl; and the lack of community distinctiveness.

The Site

- the priority is the selection of materials based on locality and sustainability
- we acknowledge the historical land use and maximise the mixed use
- nurseries feed adjacent habitats and encourage habitat exchange
- a community transport pool encourages alternative transport
- specialised industrial design ensures air and light
- use of renewable energy resources eg solar > with innovative solar spheres
- energy that is safe reliable and de-centralised > Waste to Fuel Systems
- Urban agriculture contributing to design and health > Maximise opportunities for community and personal gardens
- site placement and enhancing community involvement > site enables both public and private spaces within the confined space

Health, Social and Community

- attention to health and well-being through building design and resources used (safe and chemical free materials) > planned materials used represent the most toxin free available
- living building makes particular reference to windows etc and there is maximised access to natural light through the ellipse design
- health air circulation and use of planting to promote this > Building shapes in addition to indoor and outdoor plantings and green roofs and the benefits of the Passive House Standard
- attention to what the living building standard calls biophilia (use of environmental features, natural shape and form, natural processes, light and space, place based relationships and evolving human/nature relationships) > Strong organic aesthetic

- design fostering health relationships, partnership, reflecting community needs and growth, socially responsible > Promotion of walking spaces and casual meetings through design of pathways including open air walkways on every level of each pod
- provision of healthy indoor environments > the Passive House Standard provides excellent levels of thermal comfort, low humidity and fresh air

Materials

This project aims to source 90% + of Materials locally using a combination of high quality natural hemp fibre's (to be grown locally by certified grower during the 2013 season) and cross laminated timber panels (CLT manufactured in Nelson).

Complimenting this, we will re-purpose the huge volume of waste materials such as glass and concrete through processes that render it safe and useful meeting international environmental standards. These materials have proven useful for foundation and flat roof surfaces in addition to roading.

We acknowledge and support our Pacific location through the selection of engineered bamboo and coconut panels replacing reliance on hardwoods while supporting a wider community. We also seek to strengthen the connections between rural and urban communities by providing a **'locally grown solution'**.

CLT forms the basis of all floors and ceiling in addition to load bearing walls. A bulk of the timber used is solid NZ Pine with the option of a coconut or bamboo lamination where exposed surfaces such as flooring benefit from greater durability.

CLT offer the following benefits - Strength, Seismic, Acoustic and Vibration, Thermal Insulation, Durability, Installation Efficiency.

- using as above materials that are safe and not redlisted
- attention to the carbon footprint through growing locally and sourcing responsibly
- responsible industry and appropriate conservation and reuse of material.
- ethical and renewable resource
- ergonomic building design

Equity

- building on a humane scale with humane places
- ensuring attention is paid to access for all inclusive of disabled
- use of partnerships acknowledging all cultures and philosophies

- encouraging individual and community learning

Beauty and Spirit

- attention to aesthetics that enhance transformation > the environment and its structures reflect natural and man made elements unique to Aotearoa and Ōtautahi.
- education and learning opportunities around sustainability > Terraced gardens and greenhouses are available to the wider community.
- holistic philosophical approach > colour and design

Extend On and Adding the New

- integration of industry and living spaces adding a vibrancy and dynamism to learning and growth of individuals and community eg involvement of community in markets, kitchen, learning opportunities for the school, fostering informal and formal communities of learning and inquiry
- intergenerational learning and cultural partnership
- the past and future are contained in the present and all are enhanced through the exhale
- building stronger past foundations for the future. a sense of TIME through the breathe concept
- facilitating transition and change for individuals and community by building responsively facilitating new development as a result of this build and the growth of alternative sustainable community economies - economy based on values and exchange relationships, and growth based on community accountability, justice and equity

Passive House Standard

- the world's most recognised, independent, verified and tested energy performance standard
- sets strict performance standards that the buildings must achieve
- a performance standard, not a design standard
- The benefits of a Passive House Certified building are significant:
- Extremely low energy use:
    - 90 - 95% less heating and cooling energy use, 60-80% overall energy savings compared to a NZ Building Code compliant building
- High quality indoor air:
- Controlled ventilation for a continuous, consistent supply of fresh, heated, outdoor air

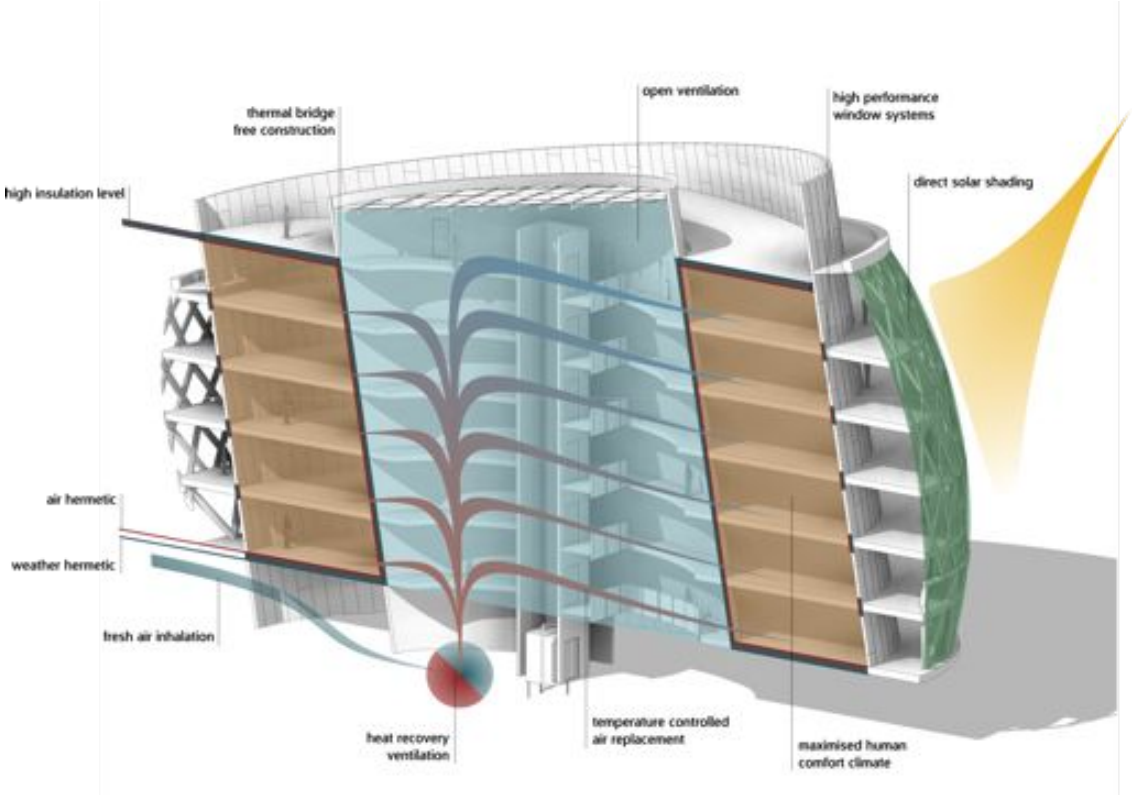
- Comfortable indoor temperatures:
  - A minimum of 20ºC all year-round, resulting in a dry, warm, healthy building
- Operational and construction savings:
  - Vastly reduced energy bills; elimination of conventional HVAC systems; much smaller solar systems required to reach zero energy; durable, tight building shell for lower maintenance
- Proven sustainability:
  - 30,000+ buildings worldwide, some zero and even positive energy. 25 year track record.
- Helping the earth:
  - With buildings contributing approximately 30% of all greenhouse gases, Passive Houses are exponentially friendlier to the environment because of their minimal energy & fossil fuel consumption.

Energy

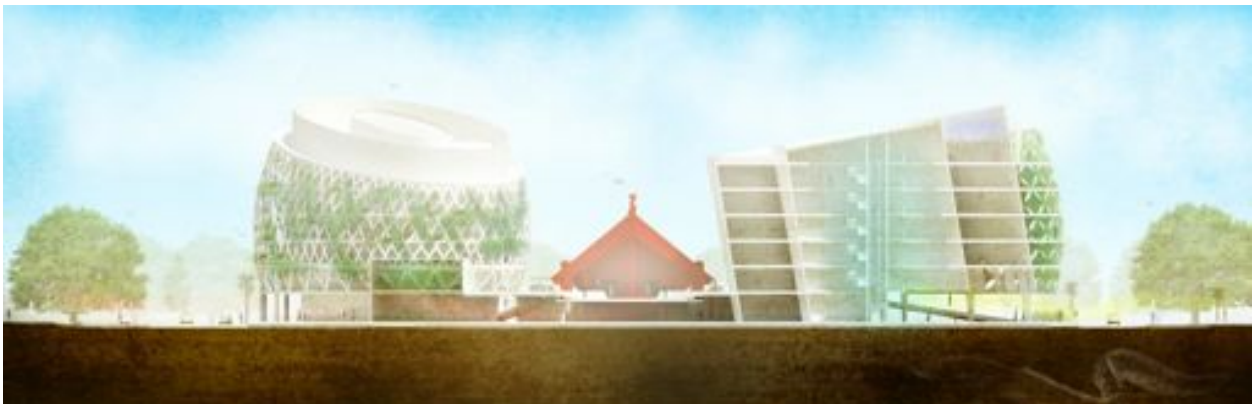
- 100% of the energy needs are supplied by on-site renewable energy on a net annual basis

Durability

- airtight building shell eliminates moisture buildup within the structure > no degradation of the structure or insulation due to dampness and mould



The Design 'Hinaki'



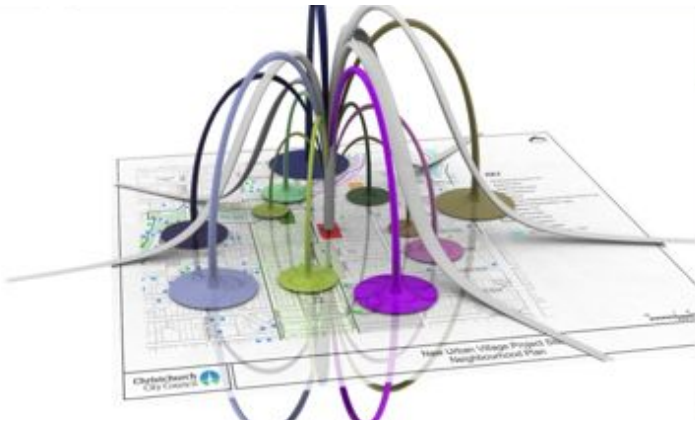
(Elevational cross-section view from East)

Objective:
To facilitate and empower an organic **and community led development within a** specific environment combining natural materials, and human focused technology, to initiate and propagate reconciliation between people and the land.

The inhalation / exhalation process of breathing helps to define our desire to enact simultaneously beneficial outcomes at both ends of a sustainable value chain.
Inserting them into the Ōtautahi environment, the project can be intimately linked with the development of unique local solutions becoming a driver of innovation in a region poised for extensive space and place creation.

'Hinaki' on the site exhale net positive outputs of energy, clean water, labour, human and environmental health, spiritual connection, community cohesion, and human happiness - crossing traditional accounting boundaries for the built environment.

The Challenge:
Creating a tangible and practicable diffusion of the private within the public, and the public within the private, presents itself as a core desire of the proposal.
Cyclical connections of materials, energy systems, natural resources, community organisations, local Iwi, and progressive value exchange systems, and the processes



of an active building and urban landscape form a guiding focus. Endeavouring to build resilience and independence while reaching out and giving back to the wider community. This is to acknowledge the shared journey to celebrate the present, and become excited by the potential of our futures.

Response:
A village ecosystem intimately linked in parallel within local and regional ecosystems.

Infrastructural resources within the city will be limited over the near-term future, whilst community and human spirit are both established and spawning in innovative ways throughout the city, leads us to embark on relationships with the local school; the citizen-initiated wetlands in the East Frame; an innovative playground development in close vicinity of the site; existing public transport infrastructure; the presence of the wāhi tapu land; and the surrounding horticultural communities.

Physical expression in our proposal links residential, commercial, and cultural nodes of the city. An elevated landscape through the site allows important visual connection with the Ōtautahi environment.

(podium level view toward whare tapere)

Residents and members of the public are able to grow and prepare food for the local community, school, etc. The atea space allows for open and fruitful public interactions between the people of the city and leads to the whare tapere giving a tūrangawaewae for the people of Ōtautahi.

All those who inhabit, visit, work and service the development are to be strengthened through a focus on communal involvement. Accommodated by communal cooking space, communal laundry infrastructure for energy, material and water use reduction in the initiation of neighbourhood relationships lead to co-responsibility and ownership of the place.

Shared recreational spaces for commercial, residential and cultural uses are linked together with the development of a transport node to service the site with nearby park, river, sport, and leisure spaces.

The integration of horticultural practices provide water, energy, and food resources to the site, whilst providing a nursery service integral to the redevelopment of the East Frame wetlands.

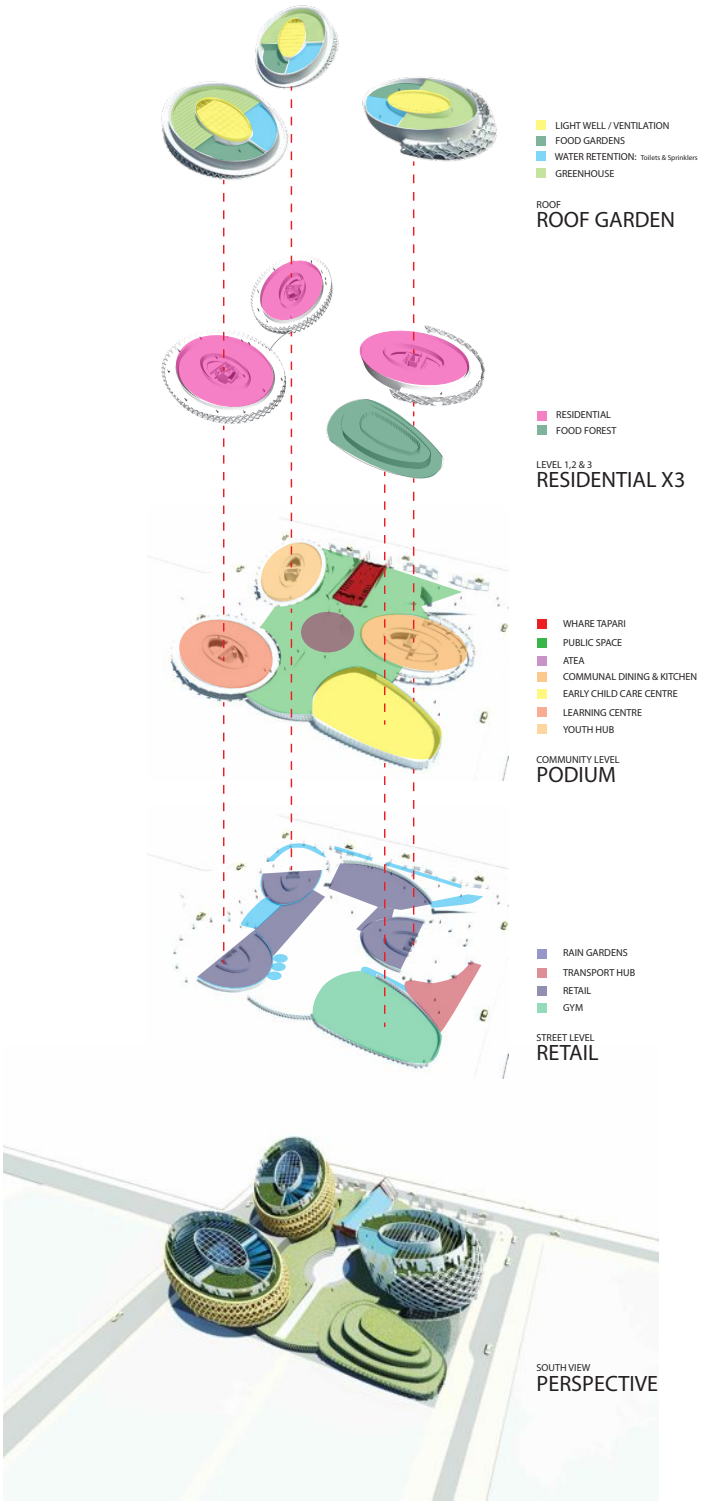
The aesthetic considerations of the expressed form derive from the strongly juxtaposed, and complimentary, horizontal and vertical features of Aoraki.

'Hinaki' performs visually and spiritually as baskets to hold and nurture. Acknowledge the redevelopment of Ōtautahi to vibrant, robust and exciting place to live, work, play, and call home.

Feasibility:
Hinaki has numerous design challenges. The excitement of a green field development and the demographic makeup is likely to change dramatically as Ōtautahi is redeveloped.

The new urban village design must adjust to meet a varying market from a workforce focused on trade services as the CBD is reconstructed to one of a higher income demographic as business returns.

Use of locally grown materials in addition to recycled materials reduces the building carbon footprint and material cost while construction systems increase the speed of build.



(Exploded drawing of development)

Phasing / Timeline

Stage One:	-Resource Consent	Commence Dec 2013
	-Building Consent	
	-Tender Documentation	
	-Construct Documentation	July 2014
Stage Two:	<u>Construction Phase</u>	
	-Ground floor Retail	
	-Podium level	
	-Office Pod	
	-Residential Hinaki x3	

Schedule of Accommodation

Overall ground floor Retail space = 3900m²

Overall level 2 (Podium) Office space= 3430 m²

Residential Units

Hinaki 1 :	21 x 2Bedroom	=24
	3 x 1Bedroom	
Hinaki 2 :	21 x 2Bedroom	=24
	3 x 1Bedroom	
Hinaki 3 :	28 x 2Bedroom	=32
	4 x 1Bedroom	

Total Building Areas

Hinaki 1 at 3 Levels above Podium = 3 x 785 = 2355

Hinaki 2 at 3 Levels above Podium = 3 x 785 = 2355

Hinaki 3 at 4 Levels above Podium = 4 x 785 = 3140

Pataka 4 at 2 Levels above Podium = 2 x 600 = 1200

Ground floor Retail	= 3900
Podium office	= 3430
Podium Outdoor area	=2480
Apartment deck areas	=864

>Total Building Area =19722 m²

Feasibility Template

Breathe - New Urban Village Indicative Feasibility Template Stage 1

Your Team's Unique Registration Number = 799

Please enter your information in highlighted cells only

Sales	Estimated average sale price for each dwelling type including GST	Number of dwellings	Total sale value for each dwelling type
Please input sales information by dwelling type			
Hinaki 1 Residential 3 storys x 21x2 bedroom	$475,000	21	$9,975,000
Hinaki 1 Residential @ x 3x1 bedroom	$360,000	3	$1,080,000
Hinaki 2 Residential 3 storys x 21x2 bedroom	$475,000	21	$9,975,000
Hinaki 2 Residential @ x 3x1 bedroom	$360,000	3	$1,080,000
Hinaki 3 Residential 4 storys x 28x2 bedroom	$475,000	28	$13,300,000
Hinaki 3 Residential @ x 4x1 bedroom	$360,000	4	$1,440,000
sub total - Gross sales		80	$36,850,000

Cost of Sales	Percentage or amount		Total cost
Real estate fees (NZ industry average)	4%		$1,474,000
Legal sale costs (per dwelling)	$600		$48,000
NZ Goods and Services Tax (GST 15%)	15%		$5,527,500
Other sales costs (insert amount if required)	$0		$0
sub total - Cost of sales			$5,575,500

Total Gross Income ***$42,425,500***

Development Costs	Area (in square meters) or Percentage of construction costs	Cost per square meter	Total Cost
Construction Costs - in ground	400 sqm	$400 psm	$160,000
Constructions Costs - above ground and landscaping	19,722 sqm	$2,100 psm	$41,416,200
total - Construction Costs			$41,576,200
Professional Fees (e.g. design, engineering)	6%		$2,494,572
Contingency	10%		$4,157,620
[illegible]	2%		$831,524
Marketing costs (insert lump sum)			$0
Other Development Costs (insert amount if necessary)			$0
Notional land value (2007 land valuation)			$4,829,000
Cost of finance (e.g. bank fees and interest payments)			$0
sub total - Development Costs			$53,888,916

Total Net Income (before tax) ***-$11,463,416***

expressed as a % of Cost -21%

	AREA SQM	$/SQM/YEAR	RENTAL INCOME
Retail and office lease yearly value @80%	8530	300	$2,047,200
	Kwh	$/Kwh	
Electricity surplus yearly @ 20c/kwh	238,133	0.2	$47,626.60

Years pay back **-5.5**

Indicative offer for land value and development rights for the 8,149 square meter project site	***$4,800,000***

Presentation Boards

The final exhale of the 'Hinaki' project releases back into the environment, energy grid, Christchurch CBD, and local life, a new form of living. Weaving together cultural connections of land, people, place, and mauri, along with new innovative environmental technologies, which cohesively complement the urban fabric. This is the beginning of a new journey, as the 'Hinaki' are laced out of the rubble, binding together to form a collaborative place with people co-inhabitating within their environment. We will work with the community, for the people to propagate and replenish the Canterbury landscape. From the mãho of the whare tapere, to the flowing water of the wairepo, this unique awe inspiring village draws people in and denotes a change in how we design. It is integral to the whenua of Õtautahi, Aotearoa, and becomes a precedent for the world to follow.