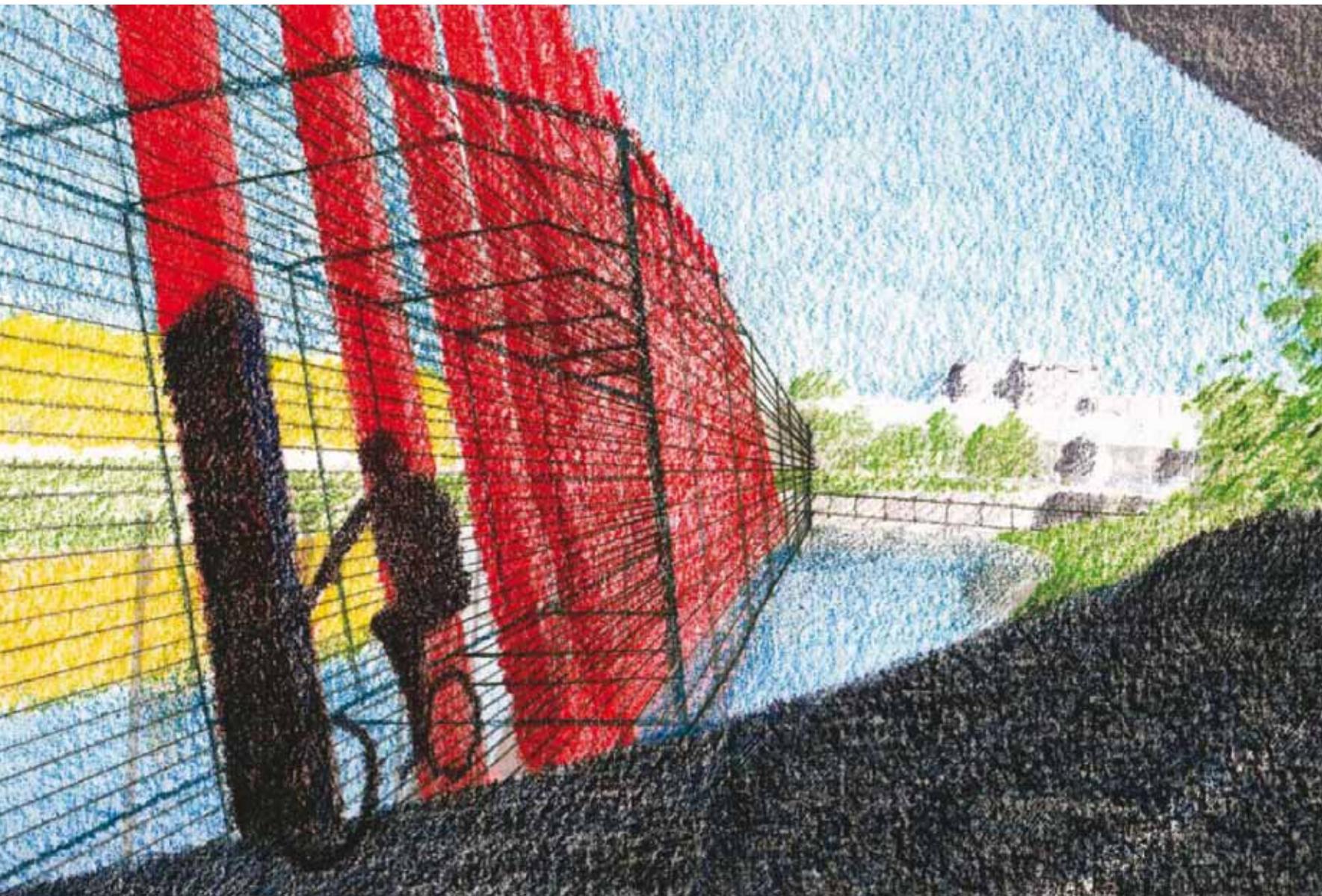


# EBD: Ecological Business District

## Zero-carbon Eco-city

Visualising a living expo low-carbon urban community





**COVER LEFT:**  
Sustainable infrastructure is introduced early in the development process. A slow development allows the site to change over time and be productive. *Design: Matt Sykes. Studio Leader: Sidh Sintusingha. University of Melbourne.*

**COVER RIGHT:**  
Water systems have been integrated into the urban design of EBD. Sophisticated 'Water Sensitive Urban Design' creates lush landscapes that clean and store water, provide habitat, and public amenity. *Design: Jacqui Monie. Studio Leader: Darko Radovic. University of Melbourne.*

**ABOVE:** Some of EBD is vulnerable to 100-year flood levels and sea-level rise. This design makes allowances for both, creating wetlands in low-lying areas that help with flooding, as well as clean and store urban runoff and EBD waste water. *Design: Paul Mak. Studio Leader: Sidh Sintusingha. University of Melbourne.*

**OPPOSITE:** Making sustainable technologies visible, this design connects bike riders to the environment and environmental processes through the changing surfaces of the bike trail. This bridge crossing the creek is made from steel and acts as a gross pollutant trap. Riders can see the rubbish collecting as they pass. *ABOVE:* At this part of the water treatment train the surface of the bike path changes to rubber and meanders, slowing cyclists down and symbolising the slow flow of water in the sediment basins. *Design: Tim Muhlebach. Studio Leader: Sidh Sintusingha. University of Melbourne.*

Agricultural towers are raised on columns creating shaded public spaces. Spaces such as this offer respite in times of extreme heat.  
 Design: *Yongpeng Shen*. Studio Leader: *Simon Whibley*, RMIT University.

During the process of transformation existing materials were put to innovative uses. Here we can see pocket vegetable gardens created out of reclaimed materials. Design: *Lyle Talbot*. Studio Leader: *Sidh Sintusingha*, University of Melbourne.

# EBD: Ecological Business District

## Zero-carbon Eco-city

Visualising a living expo low-carbon urban community



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*ROW 01: Yongpeng Shen, Steph McGlenchy, Noemie Le Coz, Kate Slattery, Kushan Sarathchandra. ROW 02: Ester Barker, Fiona Hurse, VEIL. ROW 03: Patrick Kenny, Fiona Hurse, Melanie Yencken. ROW 04: Sarah Oliver, Matt Cornelius, Shannon Brown, Jhulian Koh, Peter Stenberg-Hansen, Liew Jee Guan, Caroline Coultas, Laila Azanar. ROW 05: Ching Tan, Carson Tully.*

# Introduction

A 'living expo' low-carbon urban community now

New mixed-use developments present a unique opportunity for an innovative response to the challenge of climate change. We can now build new communities that demonstrate ways of living within the limits for greenhouse gas production proposed for 2050. Such communities can model desirable low-carbon lifestyles – ways of living better while consuming less – and test innovative products and services that could form the basis of our coming low-carbon economy.

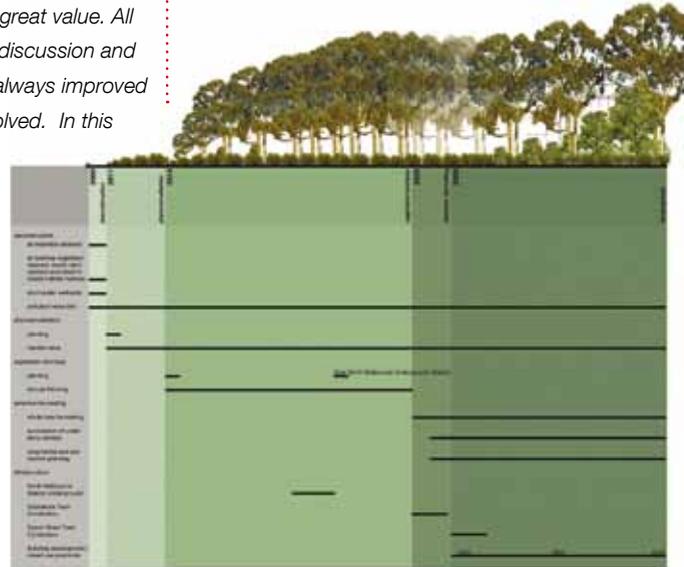
The EBD [Ecological Business District] is a design vision from the Victorian Eco-Innovation Lab (VEIL). VEIL was established in 2006, funded through the Victorian Government Sustainability Fund. A collaboration of four leading design universities and a network of design professionals, VEIL forms an 'open laboratory' for new ideas for technical and social innovation for a 'low-carbon' economy and a resilient infrastructure. VEIL delivers future concepts and prototypes for goods, services, built infrastructure, systems and lifestyles, for a sustainable Melbourne in 25 years time.

This six-month EBD project, for the site known as 'E-Gate' (between Docklands and North Melbourne), culminated in a substantial exhibition of work in the Docklands in February 2009. That vision, for a new high-density 'eco-city' next to the CBD, can claim considerable influence on the direction in which development of that site is now taking. In the words of Minister Tim Pallas (Roads, Ports and Major Projects) at the opening of the EBD exhibition:

*"...What could be done with this new land? This is where projects such as Eco City have great value. All good strategic planning begins with a discussion and I, for one, believe that this dialogue is always improved by the number of intelligent voices involved. In this case we have a brains trust of students and academics from four leading universities, as well as local and international experts generating some very exciting ideas...[VEIL's] ideas will have a real influence on the site's future."*

This booklet lays out the vision for this innovative and experimental 'city within a city', with design work across a range of scales from the urban to the domestic that are able to support a diverse, low consumption, highly productive and truly sustainable community.

Native plants are used to remediate the site from medium and low levels of contamination. During remediation trees and native grasses are planted to create an urban forest and act as a carbon sink. *Design: Fiona Hurse. Studio Leader: Sidh Sintusingha. University of Melbourne.*



# The EBD Timeline

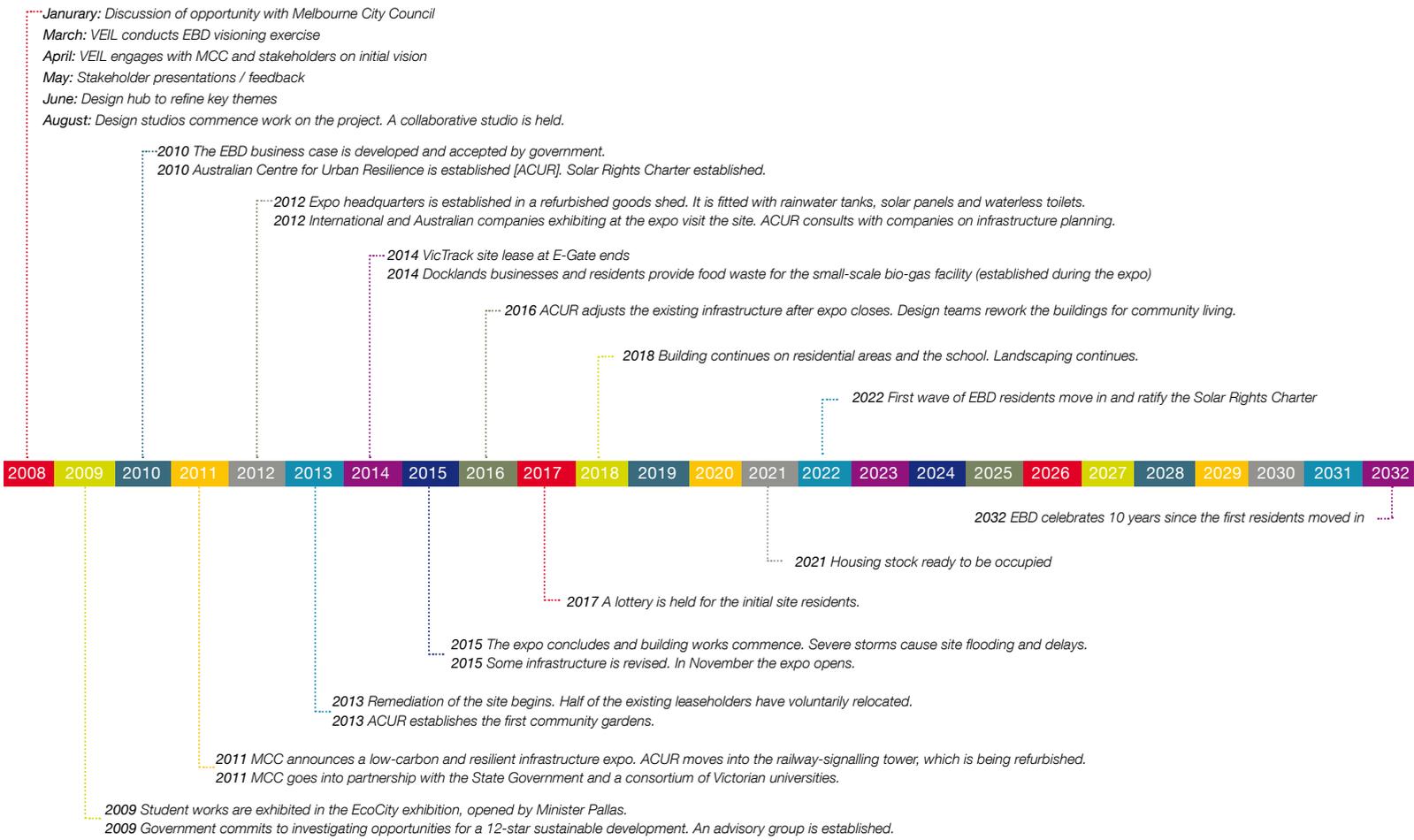
A staged site remediation and transformation for a reshaped urban form



Section of the site from North Melbourne train station  
Photography: Dianne Moy, VEIL

The transformation of the E-Gate site into EBD is a carefully staged process beginning with the development of a sustainable planning and design vision that underpins the entire development. Next comes extensive engagement with specialists, local government, state government, commercial

and residential stakeholders. The next phase of the site development is to stage a low-carbon expo, that will showcase new technologies and strategies for sustainable development. Finally, the Australian Centre for Urban Resilience will be established to carry forward these ideas as part of a coherent plan.



# E-Gate to EBD

EBD – An eco-city of the future beside the CBD

The land known as E-Gate is approximately 25 hectares situated alongside Moonee Ponds Creek, just north of Docklands and south of the North Melbourne train station. This parcel of land is the last remaining vacant site that is close to Melbourne's CBD, available for development from 2014.

Before European settlement this was a network of swamps, lagoons and marshes, an important part of the local ecology of Melbourne, rich in life and a place of significant importance to the local Wurundjeri people. As Melbourne developed the swamp was drained, becoming a dumping ground for unwanted materials and a housing shanty settlement, until rail infrastructure was established in the 1920s.

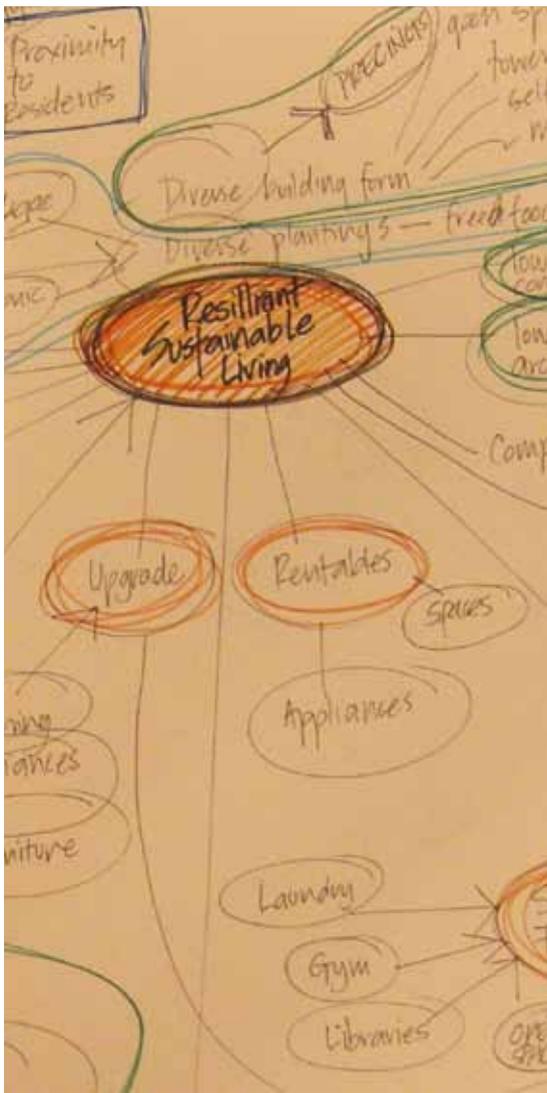
The site is currently used by Vic Track for maintenance, administration and logistical activities. In addition to Vic Track activities, a number of businesses currently hold leases, including Blue Scope Steel, which uses the site for freight distribution, and Telstra, which has a mobile phone tower on site. These leases are due to expire in 2014.

Vic Track has engaged Major Projects Victoria to develop a business case for the development of the site. Initial plans for the site were for a mix-used transit-orientated activity hub, extending Docklands to the north. The potential was assessed on conventional development values; space was allocated for car parking, retail, commercial, open space and residential purposes. An initial proposal formed a bench-case vision used to assess the site value against alternative land use options.

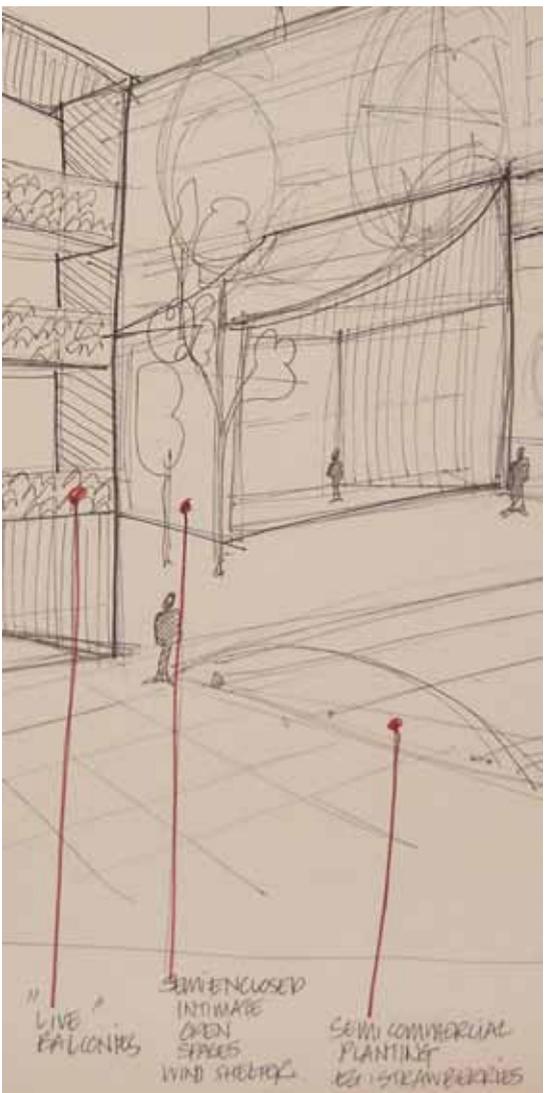
*It was in this conventional development process that VEIL decided to intervene, to challenge the validity of old paradigms, given the projected economic, social and physical impacts of climate change and 'peak oil'.*

People respond to visionary ideas, especially if they can see them translated into real action. Five- or six-star buildings have set new benchmarks that others have been inspired to follow. Buildings that become icons of green design (like Melbourne's Council House 2 and the Convention Centre) can trigger a new wave of innovative development for even greater environmental gains. VEIL's interest was to get that dynamic operating beyond the confines of individual buildings to more complex urban settings, and living and working communities. The need to rapidly 'decarbonise' the economy means that it is not enough to aim for 'six- or seven-star' communities; we need to set targets for ten or twelve stars.

*EBD is a vision for an iconic, sophisticated eco-city – a new model of sustainable development, a stimulant for eco-innovation, and a generator of critically needed knowledge for a climate-challenged future.*



Identifying site characteristics in the first Hub workshop. Design: EBD Hub participants



From characteristics to outlined form. The site was to be dense but not high-rise. Design: EBD Hub participants



Satellite photo of site as it looked in 2008. Source: DSE.

Innovation and the global economy will be shaped quickly by climate change and the end of the era of 'cheap oil'. In the next decade the 'low-carbon' economy will be the major arena for global growth. The EBD project is conceived as a focus and a stimulant for Victorian innovation, developing the local knowledge and skills needed for the new economic future.

The term 'Ecological Business District' recognises the potential economic contribution that such a development could have, spurring new businesses, services and jobs across areas such as design, construction, consumption information services, urban food production, renewable energy, transportation, water and sewerage.

# The Vision

A permanent expo of eco-innovation

The EBD vision was designed around meeting the development needs for Melbourne, showcasing and stimulating eco-innovation, lowering consumption and greenhouse gas production and exploring climate change adaptation strategies. The whole project has emphasised resilient living, providing infrastructure and systems to deal with higher average temperatures and reduced rainfall, as well as more 'extreme events': heavy rainfall days, extreme temperatures, storms and rising sea-levels. [The full vision is available from the VEIL website ([www.ecoinnovationlab.com](http://www.ecoinnovationlab.com)),]

**An eco-city of the future beside the CBD:**

- 6000 –10 000 residents and workers
- Low-carbon living now: 2050 in 2020
- Diverse lifestyles and built form
- Resilient – socially, culturally, physically
- A model of sustainable prosperity
- Living better – consuming less

EBD cannot be an island development; a key aspect of the vision is the connectivity of the development to the city, to Docklands, to West and North Melbourne and the rest of the metropolitan community. EBD emphasises interconnected public infrastructure: energy produced on site is exported to the grid; water is fed back into city systems; knowledge, produce and products are exported throughout the metropolitan area and beyond.

For the Government and the citizens of Victoria the value of EBD will come from its role in stimulating new eco-innovation and new low-carbon businesses, as well as its direct contribution to meeting the state's energy, water and carbon targets. The EBD must become a net exporter of zero-carbon energy, food and usable water. Modelling of changes that could deliver significant greenhouse gas reductions has demonstrated that this cannot be achieved by technology alone; it requires changes in lifestyles, behaviours and patterns of consumption. The EBD has to offer a diversity of sustainable lifestyles, made possible by its technology and infrastructure.

**A permanent expo of eco-innovation**

As a brown-field development site, E-Gate offers Melbourne an unprecedented opportunity to design, implement and trial new sustainable and innovative city systems and services. Of course, that would require significant financial investment. In this vision for EBD the initial investment in infrastructure would be derived from a Low Carbon and Resilience Expo, to take place on the site in 2015. In the tradition of world expos, companies, governments and institutions will come from across the world to celebrate and showcase innovation. The expo would fund the creation of the base public infrastructure for the site with much of the technology on display to be retained for use in the new development. The greatest legacy of the expo should be the spirit of innovation that would live on in the EBD.

**Aspirational characteristics:**

- Focus for innovation and radical thinking
- Showcasing Australian solutions
- Developing new solutions and business
- Selling knowledge to the world
- International learning centre (ACUR)
- Distributing knowledge to the greater community via a visitors centre and community exchange programs

Key to EBD meeting its greenhouse gas targets is the establishment of The Australian Centre for Urban Resilience (ACUR), a multi-university research organisation that would monitor, measure and facilitate social and technical innovation. The research centre would actively promotes the EBD culture of experimentation, treating the district as its research laboratory. Diversity and experimentation thus become a fundamental characteristic of all aspects of EBD life – in approaches to sustainability, building types, demographic communities, businesses and lifestyles.

The EBD community is characterised by an open lifestyle and a high level of wellbeing that has emerged from 'slow' consumption patterns, diversity within built form and the community, and the spirit of continuous experimentation. Flexibility and redundancy in infrastructure will allow the community to adapt to change, to bounce back quickly after any climate event.

*TOP RIGHT:* Food is grown hydroponically in this vertical farm. It includes a research centre, café and waste facility. The building uses large floor plates, which are two storeys high with few internal walls to maximise natural light penetration. *Design: Yongpeng Shen. Studio Leader: Simon Whibley. RMIT University.*

*BOTTOM LEFT:* Food forests along nature strips were designed into the initial EBD site. The design makes use of wasted green space, integrating local food systems into the urban fabric. Active residents maintain the gardens. *Design: Deanna German, Noemie Le Coz, Kate Slattery, Kushan Sarathchandra. Studio Leader: Mark Strachan. Swinburne University.*

*BOTTOM RIGHT:* Water systems running through EBD offer opportunities for diverse, sustainable landscapes. Vibrant community spaces are co-located with food production and local food activities. *Design: Akihito Hatayama, Yan Zhao. Studio Leader: Darko Radovic. University of Melbourne.*



*The EBD must become a net exporter of zero-carbon energy, food and usable water.*



# A New Model for Development

A focus for innovation and radical thinking

EBD proposes a new form of development that introduces a set of new values that will be translated into the creation of a sustainable and liveable city. Innovative housing schemes enable residents from all incomes to have a home in the district; affordability of housing is the key to EBD being able to maintain its diverse community. EBD's energy mix includes onsite and offsite electricity production and onsite production of bio-gas. Rainfall and recycled water support food production and street trees, as well as residential bathrooms and laundries. A high proportion of residents would have an active role in food production; many would be involved in water and energy services. The site is car-free, though residents have a share in a fleet of the most sustainable vehicles. Average car travel for each resident should be less than 10 per cent of other Victorians. Community wellbeing is linked to high levels of participation in diverse community activities. EBD is predicated on a slower development process that encourages community ownership and participation.

### Reshaped urban form

Open space is an important feature of EBD and reflects an active residential community. Residents are able to maintain 'their own' public space, a place where interactions with 'their community could take place'. Forty per cent of EBD land footprint is designated as open space; car-free streets become usable public spaces. Landscape provides recreation and food production, forming part of the water and energy systems of the site. Private and public space at EBD can be found at many levels, including ground space, spaces within buildings and rooftop spaces. The deep shade created by the urban form provides important cool spaces in the height of summer.

### More urban design characteristics

- High density, not high-rise
- A solar access charter
- Mixture of 'low-tech' passive housing systems and 'high-tech' active systems
- New configurations of private – public living spaces with much lower per-person private space and more diverse public spaces
- Diverse technology, built systems, lifestyles
- Shady, cool, open spaces
- 'Streets' for walking, bikes, electric vehicles
- Rooftop gardens, squares and fields
- Productive 'agricultural' landscapes
- Vertical farms
- No private parking (shared fleet vehicles)
- Visible energy and water systems

### A productive community

'Less bad' is no longer good enough. A new development should not be content to take less from its surrounding context, but must add positively to the economic, environmental and social productivity of Melbourne as a whole. The EBD becomes an enduring producer of water, energy, food, knowledge, innovation and lifestyles – to reduce the pressure on the extant urban community which has to be progressively retrofitted. Advanced water sensitive urban design creates a lush district, an oasis in the city without adding to the demands on the city's water supply. Wetlands clean water from Moonee Ponds Creek, forming part of EBD's rainwater collection and recycling systems; EBD water systems demonstrate the value of diverse sources. Water infrastructure is made transparent; the movement and use of water is always apparent. Sophisticated technology systems monitor and communicate the health of EBD water and mitigate risk.

EBD is an investment in renewable energy production – what is produced onsite is complemented by offsite investments where physical conditions are more appropriate. Local EBD businesses manage the array of electricity-producing systems onsite like a single power plant, and support experimentation in novel energy sources and local storage technologies. Even the energy embodied in the site is paid back over time.

The EBD creates an urban agriculture with the production of vegetables, fruit and nuts, being both part of the economy and its distinctive landscape.

### Additional characteristics of the productive district

- Electricity onsite from solar, wind and bio-gas is fed into the grid. Bio-gas also produces heat (winter) and cooling (summer). Residents also own shares in an offsite renewable energy farm.
- Urban food production; local food markets, restaurants and preservation; the EBD is a great gastronomic 'brand'.
- Water from rainfall, grey-water and sewerage are all biologically treated.
- All businesses on the site are focused on the 'new' low-carbon economy: small production and service businesses for water, energy, food and sustainable living; eco-innovation research offices of large corporations; knowledge brokering and communications. A business incubator translates local knowledge into new enterprises.
- Art, creativity and design thrive in the eco-innovation culture.



A staged development using phytoremediation. The design promotes integrated habitats (human and vegetation) and community wellbeing as key development values. Design: Ester Barker. Studio Leader: Sidh Sintusingha. University of Melbourne.

**A model of slow consumption lifestyle:**

Lifestyles in the EBD demonstrate that consuming (much) less can be a basis for living better. A diversity of super-low (slow) consumption lifestyles create a patchwork of different 'precincts' that involve varying mixes of low and high technology, public and private space, cultural expression, individual and community work. Experimentation, learning, knowledge generation, creativity and responsibility are common characteristics of all lifestyles. Community wellbeing is linked to participation in community activities – food production, for example, contributes to fitness and community cohesion and conviviality as much as to the economy. The same holds for childcare, local radio and media, walking groups, a skills exchange and so on.

EBD provides education (school and tertiary), health and recreation services for residents and the surrounding community. A local TAFE supports workers and community members to make the transition to low-carbon lifestyles, with courses on urban food production, low-consumption water technology systems, DIY media production, electronics recycling – repair, component dismantling and garment reworking. Community infrastructure includes a commercial grade kitchen, tool sheds, a learning centre, health clinics, fitness programs, childcare, and multi-faith centres.

The district will be a home to many multicultural and sustainability festivals.

*RIGHT:* An EBD sustainably designed and manufactured product, *Breezeway* eliminates the need for a clothes dryer. The drying cupboards use wind cowls to draw in the breeze and sunlight on a glass roof to increase the ambient temperature. *Design: Krista Lindegger. Studio Leader: Kate Bissett-Johnson. Swinburne University.*



**Slow consumption targets:**

- Greenhouse gas reductions of 80% (per capita, by 2022)
- Water: Target 80 litres per person per day (from reticulated supply)
- Services and sharing supplement individual ownership of critical energy or water-consuming devices
- Model of a walkable community with exceptional public transport access (no private cars on site, bike share, a car share fleet – around one vehicle for 30 residents – small electric PEVs, trams, trains)
- Waste recycling: 85% of materials recovered on site (take back schemes, sophisticated materials separation and recovery)
- Short travel distances to work



*TOP LEFT:* Diversity of built form and a walkable community are key features of EBD's urban design. The edges and blending of new and old precincts create unique urban spaces. *Design: Sarah Oliver. Studio Leader: Darko Radovic. University of Melbourne.*

*BOTTOM LEFT:* Urban agriculture is featured within EBD's urban design. Public plantings are not behind fences but are open for the public and visitors to wander around in and experience. *Design: Sarah Oliver. Studio Leader: Darko Radovic. University of Melbourne.*



*TOP RIGHT:* An example of a product designed and used onsite, the *Induction Kettle* illustrates that efficient products can be stylish and fun to use. *Design: Matt Cornelius. Studio Leader: Kate Bissett-Johnson. Swinburne University.*

*BOTTOM RIGHT:* *B.Honey* is an example of a business resulting from increased urban agriculture at EBD. Urban hives produce honey that is transformed into a range of *B.Honey* culinary, medicinal and beauty products. *Design: Anna Przybycien. Studio Leader: Brad Haylock. Monash University.*

# Introduction to the Design Studios

Seeding design projects from Victoria's leading university design programs

At the core of the action research undertaken by VEIL is an evolving 'think-tank' referred to as 'the Hub'. The Hub has design academics seconded from the design schools of Victorian universities, joined by researchers from various institutions, representatives from industry, government, environment and community groups. The Hub combines research, analysis, design speculation and evaluation, resulting in visions, concepts, reports and papers, and identifies fruitful, long-term (typically 25 year) scenarios for sustainable solutions (products, services, systems, lifestyles, built environments and infrastructure). These long-term visions and eco-innovation ideas are then formulated as 'design studio' topics for the university design schools (and as student and design competitions). Through these design studios, ideas and visions are further researched and tested by hundreds of (final-year) design students as part of their academic programs.

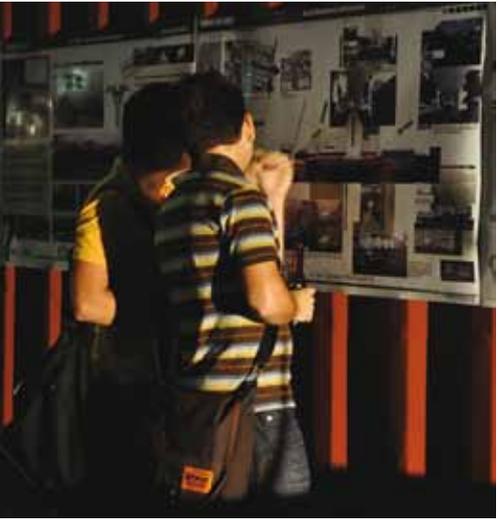
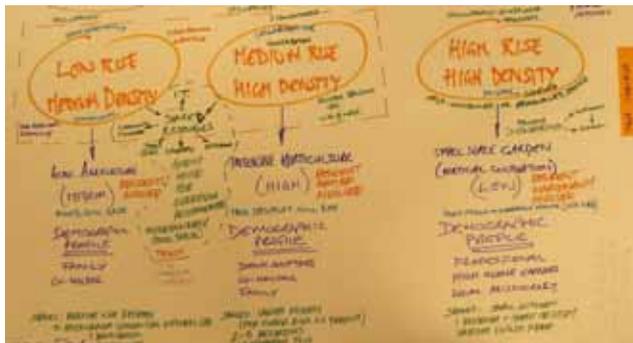
The work of the seven design studios engaged as part of the EBD project spans a broad range of design expertise, from architecture and landscape design to industrial design, communication design and service

design. While each of the design studio visions can be viewed in isolation, each addressing a particular design challenge, it is the intersections between the individual projects and the combined impact of the design thinking that builds the transformative VEIL visions and trajectories.

At the end of these design studios, the student work is referred back to the VEIL Hub and evaluated as a test of the ideas and visions that were proposed. This process involves various processes for eliciting feedback from stake-holders and the public. The student concepts/projects considered most relevant to the ongoing research are then further developed in a 'post-production workshop' with students, Hub members and professional designers.

The VEIL visioning process for EBD is ongoing.

**TOP RIGHT:** The EBD vision emerged from a series of collaborative engagements including workshops, stakeholder presentations, and engagement with international and local experts. **BELOW:** EBD Hub participants. **OPPOSITE PAGE:** The vision was then developed by university design students (bottom right) and communicated publicly in the EcoCity exhibition in March 2009 (bottom left and top right).



# EBD: Farm, Towers, Platform

Architecture Studio, RMIT University

This studio presented students with the challenge to design from the familiar and for the potential; how the urban spaces of a new district could combine their conventional use with energy, food and economic production.

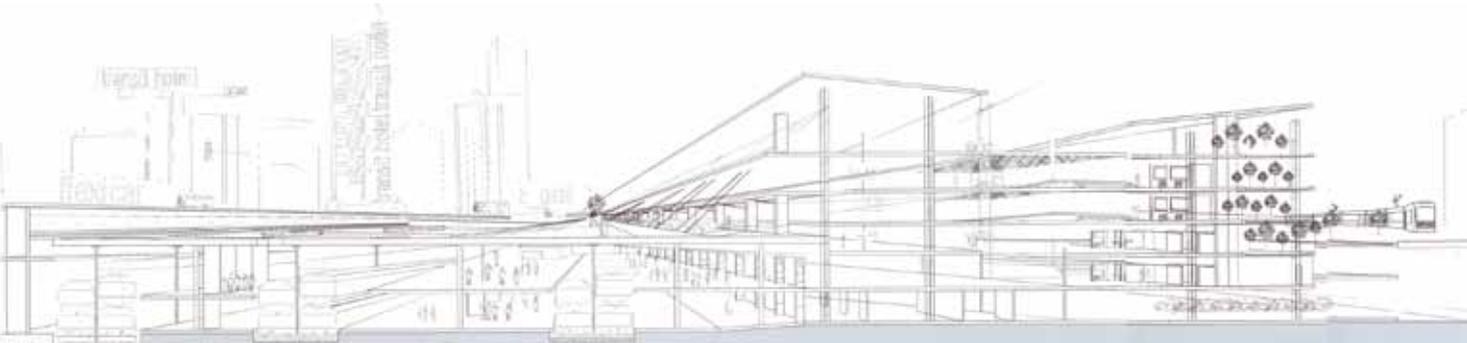
Student teams looked at one section of the site, each with a particular focus developed from site conditions, adjacencies and connections: FARM (combinations of agricultural use and public space within the western flood overlay), TOWERS (high-density living and working along the Footscray Road edge), and PLATFORM (connecting the site to North Melbourne, West Melbourne and transport networks).

The projects presented here demonstrate the breadth of responses across the studio: the careful introduction of distributed systems into known types (Patrick Kenny, *Office Farm*), rethinking public infrastructure to support distributed learning and working (Nor Aziah Hussan, *Transit Utility and Resource Centre*), and a project weaving between other propositions to provide public spaces, pedestrian connections and energy production (Lucinda Arundel, *Graft*).



**TOP:** Offices in EBD also integrate food production. Leafy greens are grown in hydroponic systems running across large windows. Office farm workers appreciate but do not maintain the system. *Design: Patrick Kenny, Studio Leader: Simon Whibley, RMIT University.*

**BOTTOM:** The Transit Utility and Resource Centre explores how transport interchanges could become public utility spaces, offering services (workstations, resources) that reduce the need to travel. *Design: Nor Aziah Hassan, Studio Leader: Simon Whibley, RMIT University.*



**TOP:** A section diagram of the Transit Utility and Resource Centre. Flexible programming of the building allows spaces to adapt to changing demands. *Design: Nor Aziah Hassan, Studio Leader: Simon Whibley, RMIT University.*



**BOTTOM LEFT:** As well as providing sheltered public space, *Graft* incorporates green infrastructure to offset the heat island effect. Rainfall is also collected and fed into EBD water systems. *Design: Lucinda Arundel, Studio Leader: Simon Whibley, RMIT University.*

**BOTTOM RIGHT:** *Graft* is a pedestrian link from North Melbourne to the Docklands. It spans across the site providing EBD pedestrians with a sheltered walkway that offers respite and refuge during climate change events. *Design: Lucinda Arundel, Studio Leader: Simon Whibley, RMIT University.*

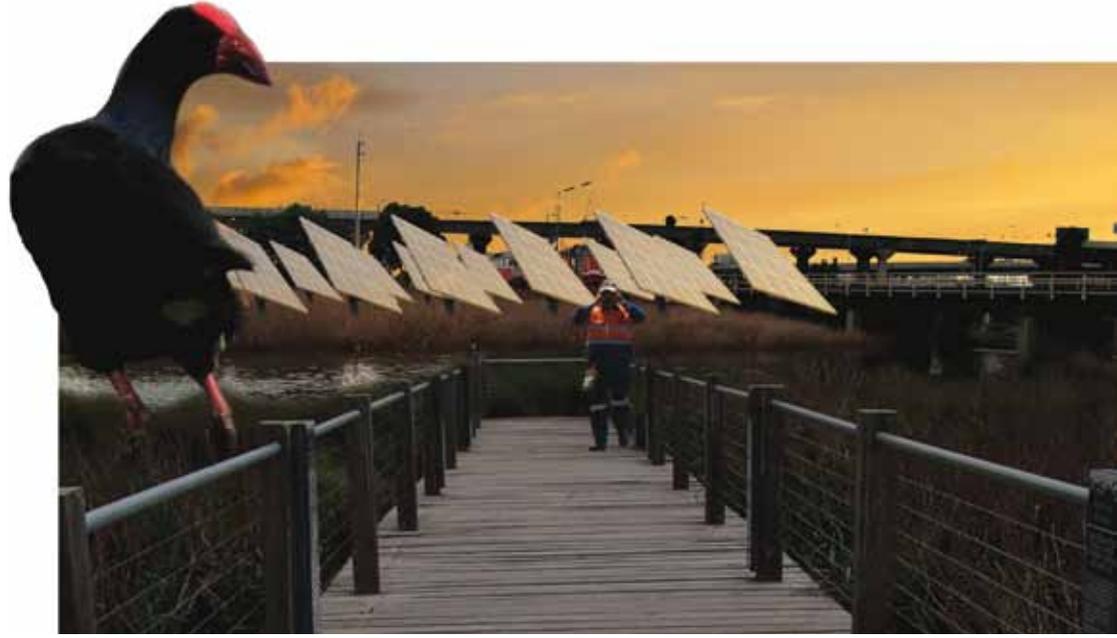
# Sustainable Landscape

Landscape Architecture Studio, University of Melbourne

This studio engaged with environmentally sustainable design (ESD) principles as applied by the Melbourne City Council (MCC). In 2008 the subject conceptualised VEIL's project site at the Melbourne Goods Railway in West Melbourne as an 'alternate CBD' or 'EBD', a catalyst site for alternative, 'sustainable' developments that 'sprawl' into the rest of MCC.

In the first group phase students carried out reviews of and analysed the broader MCC area and the EBD, focusing on open spaces and ecological/rural/urban patterns over time. From these broad design/planning frameworks students each selected their own sites for more finely scaled landscape interventions, based on their personalised interpretations of sustainability and selected ESD techniques.

Engaging with and integrating VEIL's theoretical and practical framework with the studio's established processes posed a healthy challenge for both the tutors and students. The studio atmosphere fluctuated between frustration, as the bar kept getting raised, and inspiration, as psychological and creative breakthroughs were made. Consequently, projects are even more diverse in their themes and scales than is the norm for this studio.



**STUDIO LEADER: DR. SIDH SINTUSINGHA**  
 Dr. Sidh Sintusingha is lecturer in landscape architecture at the University of Melbourne. He has practised as both an architect and landscape architect in Thailand and Australia. He has made significant contributions through research, teaching and professional activities to the areas of urban sprawl and cultures that underlie it and the application of sustainability in urban landscape design.

TOP: Distributed infrastructure is installed onsite during development. Industry is relocated during remediation and new micro industries are established alongside new infrastructure including energy, water, information technology, food and waste. *Design: Matt Sykes. Studio Leader: Sidh Sintusingha. University of Melbourne.*

BOTTOM: The red wall is an artistic representation of Aboriginal storylines. It reminds people of their connection to land, the changing climate and the rising sea-level. The wall acts as cultural remediation as well as a staged phytoremediation process. During this stage the site remains open to the public. *Design: Matt Sykes. Studio Leader: Sidh Sintusingha. University of Melbourne.*

TOP AND BOTTOM LEFT: Spaces between buildings, along the rail tracks and in rail cars are converted into productive gardens and flexible public space. *Design: Lyle Talbot. Studio Leader: Sidh Sintusingha. University of Melbourne.*

RIGHT: A staged three-year phytoremediation process is initiated. *Design: Fiona Hurse. Studio Leader: Sidh Sintusingha. University of Melbourne.*

# Developing New Solutions and Business

Visual Communication Studio, RMIT University

The Monash Visual Communication EBD studio asked students to envisage the types of businesses and organisations that would be found in the EBD precinct, or to imagine the ways in which the values and the performance of the precinct might be communicated. Students were encouraged to consider the forms that, for example, food and farming, transport, recreation and education might take within the precinct. The student solutions were many and varied, comprising such proposals as: a brand of sustainable honey, a community bike scheme, an advertising campaign for the precinct as a whole, and an onsite light sculpture that would communicate live data pertaining to emissions and energy usage.

The students' enthusiasm was inspiring. After much discussion at VEIL regarding the bigger picture of the EBD, the students' detailed projects gave life to the proposed precinct. Seen here, Sarah Oliver's Shift project proposes a bike-share scheme with a clear, recognisable and readily locatable identity. Melanie Yencken's Tall Café embodies in its identity a commitment to local production. Kirsten Moegerlein's Wear Woolly Socks initiative proposes a comprehensive business model that prioritises social and ecological outcomes.

**STUDIO LEADER: DR. BRAD HAYLOCK**  
 Brad Haylock is a lecturer in Visual Communication at Monash University. His research is concerned with intersections of art, politics and popular culture, and finds expression in visual and installation-based practices, publication design and critical writing.

**TOP AND BOTTOM LEFT:** Tall Café is one of EBD local food cafes. The café uses seasonal food, much of it sourced from EBD. The café uses living plants as part of its branding.  
*Design: Melanie Yencken. Studio Leader: Brad Haylock. Monash University.*  
**LEFT:** An advertising campaign that promotes EBD as a sustainable icon in Melbourne. The campaign questions what we promote as being iconic.  
*Design: Steph McGlenchy. Studio Leader: Brad Haylock. Monash University.*



**TOP AND BOTTOM LEFT:** Shift is one of EBD bike-share systems. Available 24 hours, 7-days a week, Shift is a self-service bike-hire system. People use the bikes to travel around EBD, neighbouring suburbs and the city.  
*Design: Sarah Oliver. Studio Leader: Brad Haylock. Monash University.*  
**TOP AND BOTTOM RIGHT:** Wear Woolly Socks sells socks that have been hand-knitted by volunteers at EBD. The initiative aims to reduce electricity consumption by encouraging people to use warmer clothes.  
*Design: Kirsten Moegerlein. Studio Leader: Brad Haylock. Monash University.*

# Sustainable Urbanism

Urban Design Studio, Melbourne School of Design, University of Melbourne

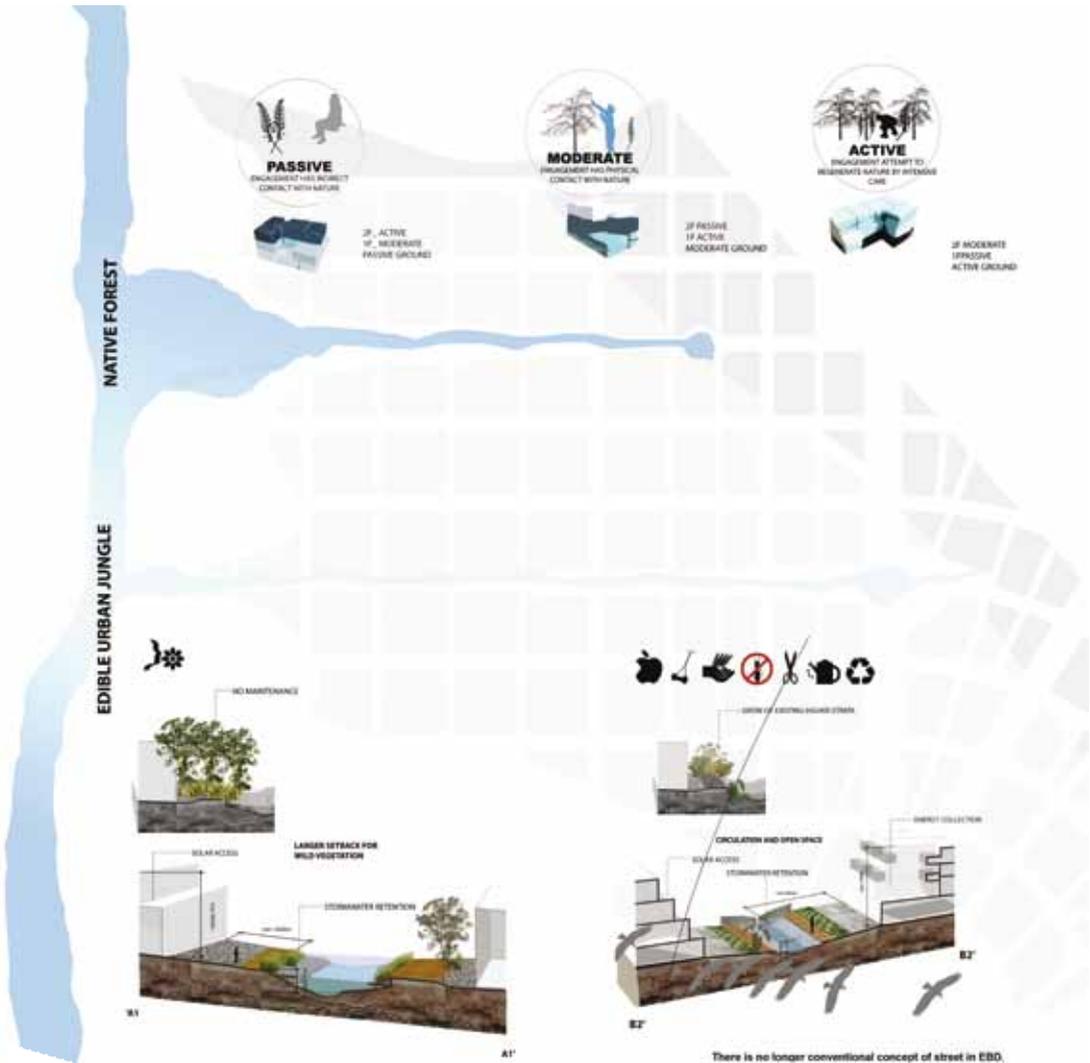
The Sustainable Urbanism Studio is an interdisciplinary urban design studio in the Masters program that allows students with backgrounds in landscape architecture, urban design, architecture and planning to work together on a design project. There is a strong collaborative ethos promoted in the design process with students working in groups for the first half of the semester and an emphasis on the production of a series of individual projects that realise components of each group's urban strategy.

The 'E-Gate' site is the last remaining major redevelopment site of its kind in the inner-city and the Council wished to use it to demonstrate the feasibility of zero-emission urbanism. Working with VEIL, the studio emphasised three important dimensions – environmental sustainability, the creation of urbanity and the economic roles of such an important part of the city beyond its residential aspects. The studio focused on the importance of the site as a place, landscape as process and urbanism as a way of life distinct from the car-dependent suburban culture prevalent in Australia.

The importance of water, social and economic diversity, urban food production, energy generation, public transport, cycling, walking was stressed.

**STUDIO LEADERS: DARKO RADOVIC, JILLIAN WALLIS & IAN WOODCOCK.** Darko Radovic is Professor of Architecture and Urban Design at Keio University in Japan and has published widely on the topic of eco-urbanity; Jillian Wallis is senior lecturer in Landscape Architecture in the Melbourne School of Design; Ian Woodcock is Research Fellow in Urban Design in the Melbourne School of Design.

**RIGHT:** Levels of gardening activity inspire Divercity's design. The design has two types of landscapes – native and productive – and three types of users – active, moderate and passive. Native landscapes require less maintenance; ground space here is more public, so private gardens apartments are located on roofs. Productive areas need more maintenance; residents active in gardening in these areas live on the ground floor. *Design: Akihito Hatayama, Yan Zhao. Studio Leader: Darko Radovic. University of Melbourne.*



## Transportation

**TOP LEFT:** Water systems have been integrated into the urban design of EBD. Sophisticated Water Sensitive Urban Design creates lush landscapes that clean and store water, provide habitat, and public amenities. *Design: Jacqui Monie. Studio Leader: Darko Radovic. University of Melbourne.* **BOTTOM LEFT:** Visible water systems are a key focus of this EBD urban design. The community can tell if they are meeting their water targets by the performance of the fountain. A gushing fountain means that the community is efficient and productive. *Design: Indah Mutia. Studio Leader: Darko Radovic. University of Melbourne.*

**TOP CENTRE:** Railway lines in the side of the building and etched into the street sit alongside new transport infrastructure and reminds the community of the sites former use. *Design: Jacqui Monie. Studio Leader: Darko Radovic. University of Melbourne.* **BOTTOM & TOP RIGHT:** Diversity of built form and a walkable community are key features of EBD's urban design. *Design: Matthew Tirpak, Sarah Oliver, Indah Mutia, Jacqui Monie. Studio Leader: Darko Radovic. University of Melbourne.*

# Habitat

Industrial Design Studio, Swinburne University

Our studio was called Habitat, using the VEIL EBD site and philosophy (Low Consumption Urban Living) as the driving impetus for this project. Three ways of living on the site were presented and overlaid by four common domestic tasks: cooking, cleaning, gardening / food production and leisure.

We thought that sustainable living could take place on the EBD site in several ways, and that it would be important to offer future inhabitants a choice in the way they chose to live sustainably. Each scenario was proposed to have a different model of product ownership and usage.

### SUSTAINABLE LIVING SCENARIO 1 – SHARED

A space where you share products with your neighbours. This scenario would require a significant change from the current system of ownership of products.

### SUSTAINABLE LIVING SCENARIO 2 – SELF-CONTAINED

A space where your appliances monitor or manage your consumption for you. Residents do not need to radically modify their lifestyle; the products that watch and provide feedback on energy consumption.

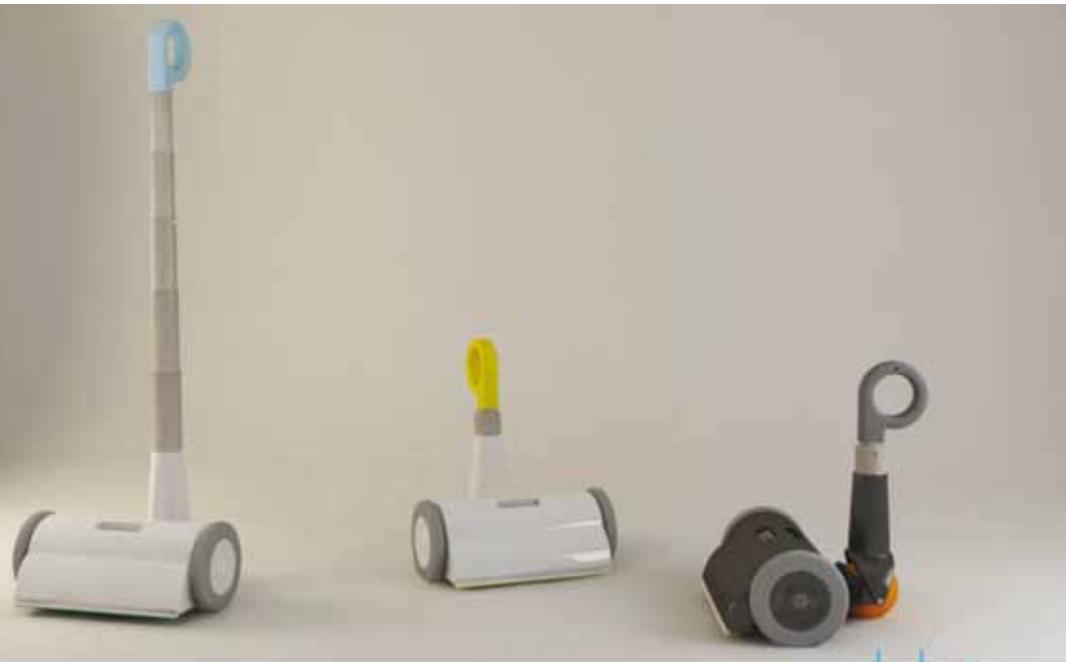
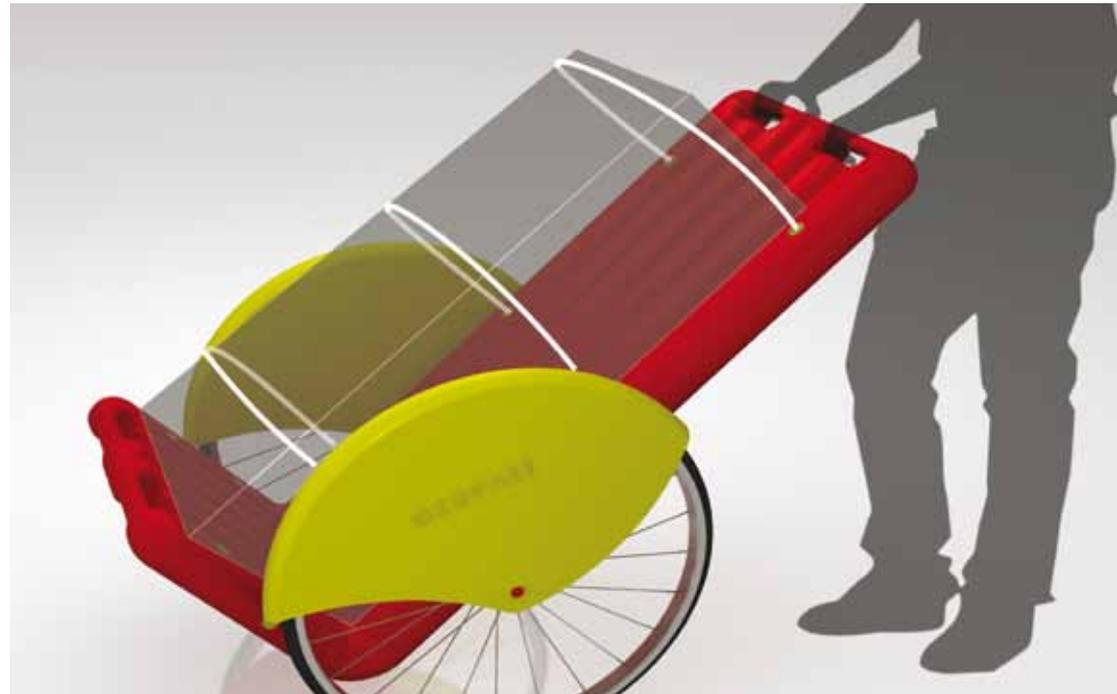
### SUSTAINABLE LIVING SCENARIO 3 – HIGHLY SERVICED

A space where most of your domestic tasks are done for you. This is the most passive of the sustainable lifestyles proposed. This scenario involved service design and the design of the interface to facilitate these services.

**STUDIO LEADER: KATE BISSETT-JOHNSON**  
 Kate Bissett-Johnston is an industrial designer whose interests lie in the intersection between people and products. She teaches in the Industrial Design and Product Design Engineering programs. Kate's inspiration for the EBD project was the belief that development of ecologically sustainable products can be driven by better understanding of user behaviour within a social context.

**STUDIO LEADER: DENIS SMITKA**  
 Denis Smitka has been active in the industrial design community for several decades. He first worked in exhibition, shop-fitting and branding roles before establishing an architectural lighting business in the mid 1990s. At the same time he began lecturing at RMIT in Industrial and Interior Design and more recently at Swinburne University.

**TOP AND BOTTOM RIGHT: Staticlean** uses static energy to pull dirt and dust from the carpet, using a negatively charged roller. The appliance is designed for shared use and is stored in communal areas within the buildings. *Design: Sashia Rosari. Studio Leader: Kate Bissett-Johnson. Swinburne University.*



staticlean



**TOP AND BOTTOM LEFT: Aqua Anytime** promotes smart water management for the EBD's communal garden. The interface allows users to see how much water they have used and produced. Users then select water quality and quantity, selecting the grey hose if watering with grey water. *Design: Ching Tan. Studio Leader: Kate Bissett-Johnson. Swinburne University.*



**TOP AND BOTTOM RIGHT: Uterail** is a multi-purpose trailer that enables human-powered haulage. The trailers can be transformed into an upright or flatbed trolley and can be attached to a bike. The different configurations allow the trolley to access tight urban spaces. *Design: Mark Lane. Studio Leader: Kate Bissett-Johnson. Swinburne University.*

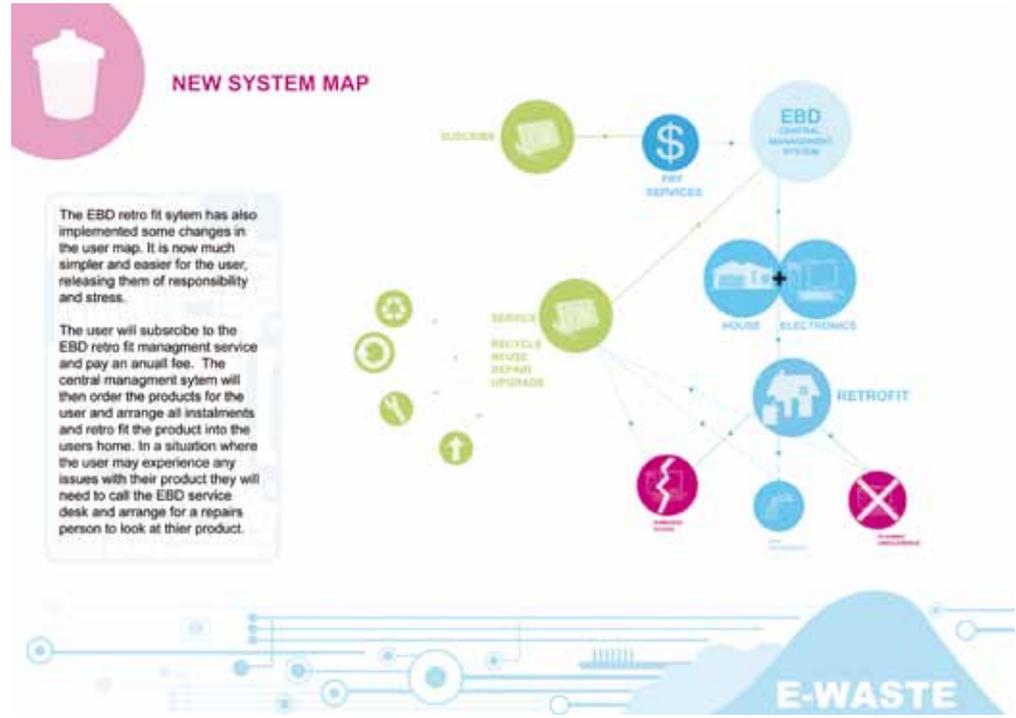
# Services and Social Sharing

Systems and Services Studio, Swinburne University

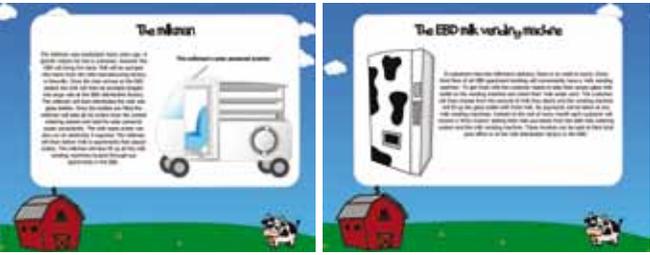
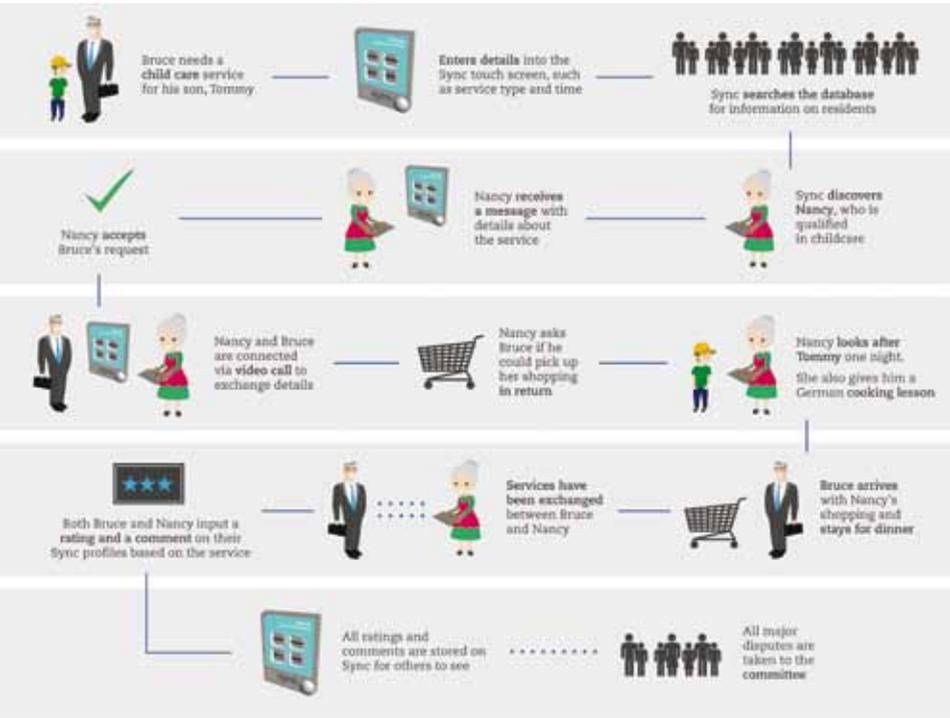
Design Systems and Services is a third year undergraduate interdisciplinary team-based studio with students from Communication Design, Industrial Design, Interior Design and Multimedia. The intent of the studio is to introduce students to systems and service methodologies and approaches, and to promote sustainable systems thinking in design education. Students are challenged to envisage new futures that address a theme aligned with VEIL and ground their projects within particular social contexts, physical terrains and deals with topics that are challenging to Australian society. The EBD theme provided a great context with the opportunity to visualise the creation of a sustainable mini-city. We envisaged that the site would start to be developed in 2014 and looked ahead to 2032 when the EBD development would be occupied and all the facilities fully established. The challenge of the studio was to propose new, innovative and sustainable systems and services that would support the EBD development and its everyday living activities. This will happen at a time when our lives are conducted and organised in a significantly different way because of environmental pressures.

**STUDIO LEADER: MARK STRACHAN**  
 Mark Strachan is a lecturer at the Faculty of Design, Swinburne University of Technology. He holds a degree in Industrial Design and a Masters Degree In Interaction Design. He is also a director of Royal Society of Arts Australia & New Zealand. Mark has been a design consultant for over 20 years specialising in product development and interaction design, with extensive experience in the development of new products, systems and services for a diverse range of clients.

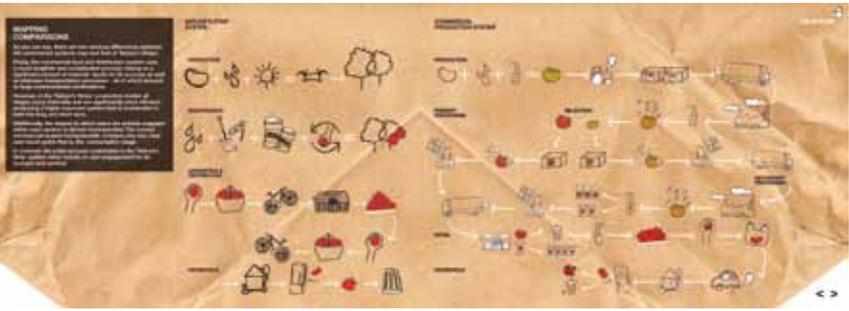
**TOP:** E-waste is a rental and repairs system for electronic goods within EBD. Residents enter into product agreements for the use and service of goods, which are repaired and maintained by an onsite business. Centralised takeback and repair of goods maximises the life of the materials and allows for recycling. *Design: Georgia Young, Candy Wan, Thaweeapat Thanarungrot, Nicholas Toh, Hemw Devi, Sammy Szeto. Studio Leader: Mark Strachan. Swinburne University.*



**BOTTOM:** Lite.Switch is an electricity management system used by EBD businesses and residents to efficiently and easily manage their electricity consumption. Lite.Switch allows users to power down specified appliances without having to turn each appliance off at the switch. *Design: Shannon Brown, Julian Koh, Peter Stenberg-Hansen, Liew Jee Guan, Caroline Coultas, Laila Azanar. Studio Leader: Mark Strachan. Swinburne University.*



**TOP LEFT:** Thrive is community system where residents can provide reciprocal services for each other through a social networking platform. The system enables the retired and elderly to feel like active and valued members of the community. *Design: Andrew Knee, Oliver Pauliczek, Danii Barcan, Jesse Mallon, Jessica Kazenwadel. Studio Leader: Mark Strachan. Swinburne University.* **BOTTOM LEFT:** EBD Milk proposes a centralised delivery system for milk in the EBD. Milk is freighted to EBD by rail, bottled on site and delivered to residents by the milkman, who also manages EBD's milk vending machines. *Design: Jodie Walker, Belinda Galea, Shelley Morecraft, Vania Wibowo, Brendan McAllister. Studio Leader: Mark Strachan. Swinburne University.*



**TOP MIDDLE AND BOTTOM RIGHT:** Nature Strips is an example of a localised food system at EBD. Intercropping allows cultivation of multiple crops in the same space, maximising land use. Local residents are encouraged to participate in every stage of production. *Design: Deanna German, Noemie Le Coz, Kate Slattery, Kushan Sarathchandra. Studio Leader: Mark Strachan. Swinburne University.*

# ZeroCar

Industrial Design Studio, RMIT University

The ZeroCar studio investigated the EBD vision that the precinct would be 'car free' and that residents would have no private vehicle ownership. Students explored concepts for innovative public transport systems based on existing rail infrastructure, water-based transport modes, share vehicles, and single-person autonomous platforms. Service vehicles and systems were also investigated. The character of existing private transport options was explored and extended, creating vehicles that could be reconfigured to enhance the functions they offered. This also allows for the idea of fewer vehicles delivering a wide range of transport options rather than a great number of fixed and dedicated vehicle types. The vehicle designs also responded to the idea of different kinds of short-term use by EBD residents. The EBD precinct is an experimental zone, allowing new forms of infrastructure and lifestyle to be tested and evaluated. The vehicular component of the project reflected this invitation to explore and test new possibilities that support a more sustainable existence.

**STUDIO LEADER: IAN WONG**  
 Ian Wong is an Industrial Designer with over 20 years experience in consulting, manufacturing and design education. Ian has a research interest in the practice of industrial design in Victoria.

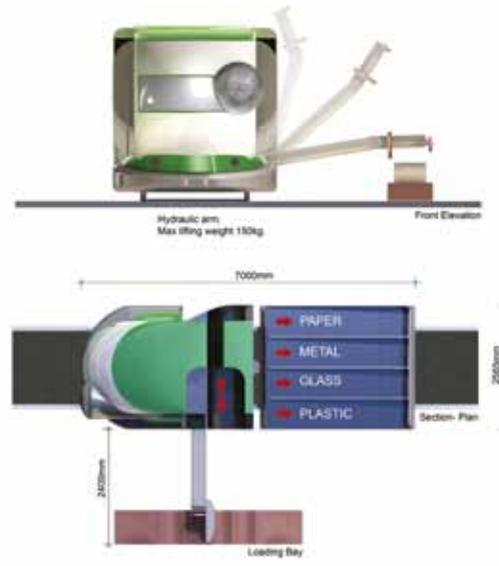


*TOP:* With rising sea levels transport via Melbourne's waterways will be added. *Design: Jacky Wu. Studio Leader: Ian Wong. RMIT University.*

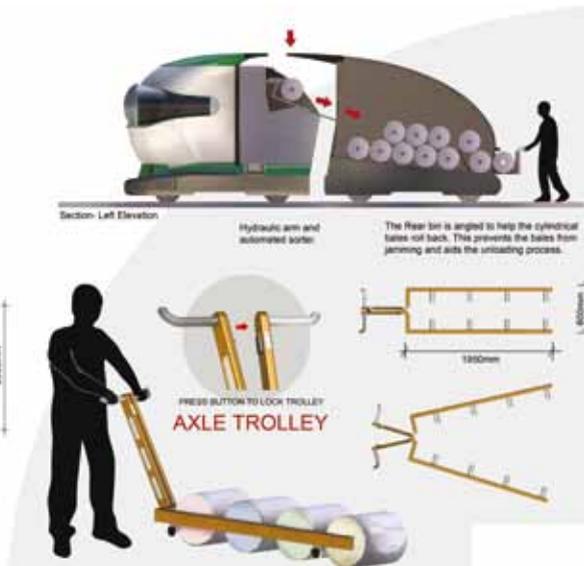
*BOTTOM:* Cargocar doubles as a local transport vehicle when not required for passengers, ensuring optimal use. *Design: Roger Wettenhall. Studio Leader: Ian Wong. RMIT University.*



*BOTTOM LEFT:* Cargocar doubles as a local transport vehicle. *Design: Roger Wettenhall. Studio Leader: Ian Wong. RMIT University.*



*TOP:* 2two4 allows users to reconfigure the car to meet users' requirements, allowing fewer cars to deliver the required range of functionality. *Design: Carson Tully. Studio Leader: Ian Wong. RMIT University.*



*BOTTOM AND MIDDLE RIGHT:* Zerocarbin is a track-based recycling vehicle available to residents to help to reduce landfill waste. *Design: Tosika Maluma. Studio Leader: Ian Wong. RMIT University.*

# About VEIL

The Victorian Eco Innovation Lab at the University of Melbourne

The Victorian Eco-Innovation Lab (VEIL) seeks to identify and promote emerging technical and social innovations that could form part of future sustainable systems. VEIL is a response to the critical challenge of our times: the urgent need for fundamental social, technical and structural change to bring about what is now widely referred to as a 'low-carbon' (or even 'zero-carbon') economy. Any actions to reduce greenhouse gases also have to increase community resilience to a changing climate (including extreme weather events) and the effects of escalating oil prices, as global demand outpaces supply.

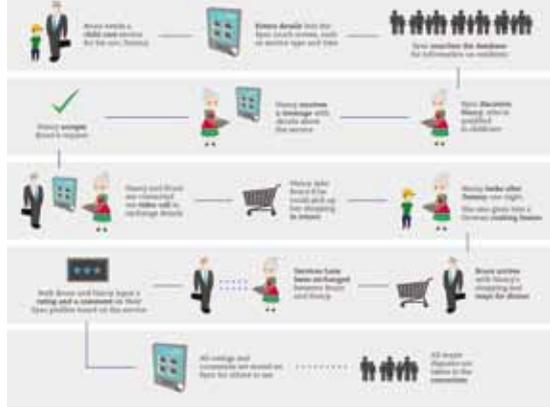
VEIL operates on a model similar to an innovation-led design company, but in the public arena. With public funding, research grants and a design and research team drawn from staff and students in the participating universities, VEIL works to envisage future concepts and prototypes for goods, services, built infrastructure, systems and lifestyles, for a sustainable Melbourne in 25 years. VEIL has the explicit mission to change expectations of the future (to redefine the conceptual landscape of the future market and future lifestyles) and to 'seed' new, innovative ideas that could contribute to making that future a reality.

VEIL's foundation work in 2007 developed 'glimpses' of Melbourne 2032, assuming that the city was reaching agreed sustainability targets. The '2032' date has been maintained even though the future horizon has reduced in time as the project has developed. The focus on Melbourne has also been complemented with work in regional urban centres.

The VEIL approach emphasises the following characteristics:

- *Changing systems of production and consumption (and resource provision)* – VEIL accepts that there is a substantial and long-standing body of modelling and research showing that it is not possible to reach a sustainable future by simply doing what we already do in a more efficient way. VEIL bases its approach on the process of exploring fundamental changes in systems. This is the basis of the 'eco-innovation' in the project's title.
- *Solutions-oriented* – focusing on optimistic, desirable futures: We work with the best scientific projections of the nature and likely impact of anthropogenic ('forced') climate effects. However, we cannot expect that these threats will alone induce people and society to make changes. VEIL focuses on solutions and the projection of alternative futures that are both desirable and sustainable.

TOP: Design: Steph McGlenchy. Studio Leader: Brad Haylock. Monash University. MIDDLE: Design: Krista Lindegger. Studio Leader: Kate Bissett-Johnson. Swinburne University. BOTTOM: Design: Andrew Knee, Oliver Pauliczek, Danii Barcan, Jesse Mallon, Jessica Kazenwadel. Studio Leader: Mark Strachan. Swinburne University.



- *Visions – not (just) words and data* – To change community expectations that the future will be based on an extrapolation of 'business as usual' requires a particular form of communication. In an age when the visual representation of alternative future capacities is so powerful and ubiquitous, alternative sustainable futures must also be communicated visually and immersively. VEIL has explored the power of 'glimpses' – evocative design sketches that embody a transformation of existing systems, but which still require the viewer to co-create the context-specific form in which they could exist.
- *25 year horizons ('time shifting')* – To overcome resistance to change from existing commitments (to policy, intellectual property, business and personal investments) the VEIL project focuses on a 25 year horizon – one that fits well with the timelines for action on climate change and is generally beyond the existing commitments of most participants (that would otherwise constrain open thinking about the future).

TOP LEFT: Design: Yongpeng Shen. Studio Leader: Simon Whibley. RMIT University. MIDDLE LEFT: Design: Tim Muhlebach. Studio Leader: Sidh Sintusingha. University of Melbourne. BOTTOM LEFT: Design: Indah Mutia. Studio Leader: Darko Radovic. University of Melbourne.

TOP RIGHT: Design: Akihito Hatayama, Yan Zhao. Studio Leader: Darko Radovic. University of Melbourne. MIDDLE RIGHT: Design: Akihito Hatayama, Yan Zhao. Studio Leader: Darko Radovic. University of Melbourne. BOTTOM RIGHT: Design: Fiona Hurse. Studio Leader: Sidh Sintusingha. University of Melbourne.

BOTTOM CENTRE: Design: Indah Mutia. Studio Leader: Darko Radovic. University of Melbourne.



TOP: Design: Paul Greskie, Kathryn Massey, Felicity Mitchem, Gianni Renda, Blanka Voight. Studio Leader: Mark Strachan. Swinburne University.

BOTTOM LEFT: Design: Ching Tan. Studio Leader: Kate Bissett-Johnson. Swinburne University. BOTTOM MIDDLE: Design: Charles Ng. Studio Leader: Ian Wong. RMIT University. BOTTOM RIGHT: Stringybark Suburban Sustainability Festival.

- *Plausible new trajectories* – ‘revealing’ current (social and technical) innovations: To break from business as usual futures, new trajectories of development need to be explored and envisaged. Future visions need convincing narratives of how current social or technical conditions might ‘unfold’ to create the new conditions. The challenge is to identify appropriate starting points or innovations; these may be invisible because they sit outside the mainstream or because they are small and localised. A blog process established by VEIL for communicating about small-scale (often community-based) initiatives provides one avenue for finding these appropriate starting points; an active ‘observatory’ and an international network of researchers and projects provides another.

- *Distributed systems* – In the VEIL exploration of new low-carbon and resilient futures there is a focus on changing the underlying system of production and consumption: from a pattern of growth based on increasing scale in long ‘linear’ production chains to what we refer to as ‘distributed systems’. This system of production and consumption involves: greater diversity, a (re)localisation of points of production and a strong network of sharing, linking the local to the regional, national and international. (The archetypical model is the internet, or the production, distribution and consumption of renewable electricity from solar or wind, etc, strung out along a grid.) In this model ‘the global’ becomes a ‘network of networks’.

#### The VEIL program contributes to eco-innovation through:

- developing future ‘visions’ – (concepts, sketches, images of possible future conditions for goods, services, the built environment, lifestyles)
- revealing innovative change (current and emerging social and technical developments)
- seeding new ideas and projects (for present-day innovation)
- exploring policy challenges (for government and the professions)
- new research and consultancy
- international engagement
- a substantial communications program (internet, videos, exhibitions, events, lectures, publications)

VEIL was established through Our Environment Our Future – Victorian Sustainability Statement in 2006 and is funded through the Victorian Government Sustainability Fund managed by Sustainability Victoria. The project is a partnership between the University of Melbourne, Monash University, Royal Melbourne Institute of Technology, and Swinburne University. VEIL is managed by the research group of the same name in the Faculty of Architecture, Building and Planning at the University of Melbourne.

#### VEIL STAFF:

Director: **Prof Chris Ryan**; Project and Design Coordinator: **Dianne Moy**; Policy Research Officer: **Kirsten Larsen**; Distributed Systems Research Officer: **Che Biggs**; Design Research Assistant and Sustainable Melbourne moderator: **Kate Archdeacon**; Information Systems: **Rob Eales**. **Dr Michael Trudgeon** joined the team as Research Fellow and Deputy Director in December 2009.

#### Acknowledgements:

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 Graham Crist, RMIT University, Architecture  
 Ian Wong, RMIT University, Industrial Design  
 Kate Bissett-Johnson, Swinburne University, Industrial Design  
 Mark Strachan, Swinburne University, Systems and Services Design  
 Sidh Sintusingha, University of Melbourne, Landscape Architecture  
 Ian Woodcock, University of Melbourne, Urban Design  
 Darko Radovic, University of Melbourne, Urban Design  
 Ursula Tischner, eConcept, Agency for Sustainable Design  
 Peter Harper, Centre for Alternative Technology, Wales  
 Robert Nerola, IEEE  
 Dianne Moy, Chris Ryan, Kate Archdeacon for VEIL

##### EXTERNAL / PROFESSIONALS / GUESTS:

Alan Pears, Sustainable Solutions  
 John Wiseman, McCaughey Institute, University of Melbourne  
 Mark Richardson, Monash University, Industrial Design  
 Michael Trudgeon, Crowd Productions  
 Dave Mayes, Alex Fearnside, Michelle Ely, Robert Moore, Michael O’Hanlon, Kara Abakumenko and Michaela Lang, MCC  
 Art Truter, Julian Smith, Zac Cvitkovic, DPCD  
 Sally Semmens from DOI  
 Ashley Admirall, MPV

##### ECO-INNOVATION SEMINAR PRESENTERS:

Peter Harper Director of Research and Innovation Center for Alternative Technologies (CAI).  
 Mick Pearce, Architect & Designer of CH2  
 Sheridan Blunt, Coordinator, ‘Melbourne as Catchment’, Melbourne City Council  
 Jeremy Reynolds, Manager of Demographic Research, Department of Planning and Community Development  
 Ursula Tischner (eConcept, Germany)  
 Dr Peter Newton (Institute for Social Research and Center for Regional Development, Swinburne University)

##### DESIGN STUDIOS:

###### ZeroCar (RMIT)

Studio Leader: Ian Wong  
 Tutor: David Flynn  
 Exhibiting Students: Charles Ng, Jacky Wu, Roger Wettenhall, Tosika Maluma

###### Urban Design (University of Melbourne)

Studio Leader: Prof. Darko Radovic  
 Tutor: Ian Woodcock, Jillian Walliss  
 Exhibiting Students: Akihito Hatayama, Yan Zhao, Matthew Tirpak, Sarah Oliver, Indah Mutia, Jacqui Monie

###### Habitat (Swinburne)

Studio Leader: Kate Bissett-Johnson  
 Tutor: Denis Smika

Exhibiting Students: Alexandra Markert, Ching Tan, David Crosato, Luke Chaberkar, Yoon Jae Jung, Matthew Cornelius, Krista Lindegger, Mark Lane, Sashia Rosari, Wei Shen

###### Designing the Sustainable Landscape (University of Melbourne)

Studio Leader: Dr Sidh Sintusingha  
 Tutor: Erwin Taal  
 Exhibiting Students: Ester Barker, Fiona Hurse, Jeremy Hunt, Lyle Talbot, Matt Skyes, Paul Mac, Richard Bruch, Tim Muhlebach

###### Architecture (RMIT)

Studio Leader: Simon Whibley  
 Tutor: Matthew Herbst  
 Exhibiting Students: Yon peng Shen, Nor Aziah Hassan, Tim Massuger, Patrick Kenny, Lucinda Arundel, Kai Hong, Arfann Ali

###### Visual Communication (Monash)

Studio Leader: Dr. Brad Haylock  
 Exhibiting Students: Anna Przybycien, Jacinta Sobey, Jacquie Lawson, Kirsten Moegerlein, Lily Tidhar, Luke Mancini, Melanie Yencken, Nomiya Masakura, Pamela Paikopoulos, Poom Thuaksuban, Sarah Oliver, Steph McGlenchy, Tegan Connelly, Tiffany Chou

###### Systems & Services (Swinburne)

Studio Leader: Mark Strachan  
 Tutors: Emma Luke, Andrew Hazelton  
 Exhibiting Students: Andrew Brown, Rio Soetanto, Steve Gavan, Maria Margaretha, Vera Novita Go, Georgia Young, Candy Wan, Thaweeephat Thanarungrot, Nicholas Toh, Hamw Devi, Sammy Szeto, Larry James, Luke Sawvides, Robert Davies, Nalinda Ranaba, Jodie Walker, Belinda Galea, Shelley Morecraft, Vania Wibowo, Brendan McAllister, Reif Camping, Bobbie Jennings, Tim Lawley, Michael McMahon, Peter Douglas, Matthew Cornelius, Jeremy Koren, Saran Nipatakusol, Alicia Braumberger, Linsey Mackay, Ella Bowring, Yudy Chairy, Zoe Shum, Milca Parcevski, Elizabeth Mead, Lisa Formaggin, Tennyson Chia, Hsen Ming, Shannon Brown, Jhulian Koh, Petter Stenbergh-Hansen, Liew Jee Guan, Caloine Coultas, Laila Azanar, Deanna German, Noemie Le Coz, Kate Slattery, Kushan Sarathchandra, Tristan Derma, Ashley Ng, Luke Deacs, Kirsty Eckard, Megan Edwards, Andrew Knee, Oliver Pauliczek, Danii Barcan, Jesse Mallon, Jessica Kazenwadel, David Hay, Effie Thiang, Karmun Lin, Kim Nguyen, Van Le, Paul Greskie, Kathryn Massey, Felicity Mitchem, Gianni Renda, Blanka Voight, Mark Badagoff, Chris Downey, Adrian Hadjialexiou, Ben Juzwin, Stefan Rodricks

##### EXHIBITION:

Exhibition Management  
 Curator: Dianne Moy (VEIL)  
 Producer: Tiani Chillemi (Decode Media)  
 Designer: Ross Gardam (Space Left)  
 Assistants: Kate Archdeacon, Rob Eales (VEIL)

##### EXHIBITION EVENTS:

Opening Night Speakers: Prof. Chris Ryan (VEIL), Minister Tim Pallas (Major Projects), Deputy Lord Mayor Susan Riley (Melbourne), The Hon. Tom Kvan (University of Melbourne)  
 Sustainable Cities Round Table: Ferné Edwards (VEIL)



**ROW ONE:** Yongpeng Shen, Steph McGlenchy, Noemie Le Coz, Kate Slattery, Kushan Sarathchandra, Carson Tully, Deanna German, Noemie Le Coz, Kate Slattery, Kushan Sarathchandra, Paul Greskie, Kathryn Massey, Felicity Mitchem, Gianni Renda, Blanka Voight. **ROW TWO:** Ester Barker, Fiona Hurse, VEIL, Ching Tan, David Luke Veentjer, Matt Sykes. **ROW THREE:** Patrick Kenny, Fiona Hurse, Melanie Yencken, Sarah Oliver, Matt Sykes, Tim Muhlebach. **ROW FIVE:** Sarah Oliver, Matt Cornelius, Shannon Brown, Jhulian Koh, Petter Stenberg-Hansen, Liew Jee Guan, Caloine Coultas, Laila Azanar, Kirsten Moegerlein, Indah Mutia, Jacky Wu.

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innovation lab



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