



Phillip Island

environmental features



“Sets a new benchmark
for sustainable residential
development”

2007 Urban Development Institute of
Australia Awards for Excellence

Image – Kobby Club-rush *Isolepis nodosa*
growing in the Seaberry Creek Park wetland

Overview

Seagrove is an environmentally-sensitive, residential subdivision, located only 700m from a safe, sandy swimming beach in Cowes, Phillip Island. Phillip Island is ninety minutes' drive south-east of Melbourne.

The 36 hectare site features rising land with views north across Western Port Bay, mature remnant eucalypts (including eucalypt woodland of regional conservation significance), and rich birdlife (including White-faced Herons, Swamp Harriers, Wood Ducks, Lorikeets, Rosellas, Superb Blue Wrens, Honeyeaters and over twenty other native species). Seagrove is walking distance from shops, restaurants and cafés.

Recognition

Seagrove was recognised in the category of Environmental Excellence at the prestigious 2007 Urban Development Institute of Australia Awards for Excellence.

The judges commended Seagrove for "setting a new benchmark for sustainable residential development".

Seagrove was also recognised by the local community for excellence in planning and design in an independent poll asking over 200 residents to nominate examples of good and bad planning and design on Phillip Island.

Design philosophy

Seagrove's design is a reflection of Phillip Island's coastal character and a response to the superb natural values of its location.

Seagrove's style is contemporary, yet informal. In Seagrove's open spaces – which comprise almost 10% of the site – bold geometry, with large radii and simple, elegant architecture, complement the organic shapes of the street layout, which responds to the natural contours of the land. Extensive plantings of indigenous species provide habitat for Seagrove's prolific birdlife, and the use of high-quality, natural materials creates a feeling of quality without pretension.

The developer

Southern Sustainable Developments is a Phillip Island-based company committed to delivering high quality projects with a focus on design, liveability, value, and the environment.

Southern Sustainable Developments' multi award-winning project team brings together extensive experience in land development and the latest ideas in urban design and environmental sustainability.

Southern Sustainable Developments is also developing a 340-lot residential estate in the south-east growth corridor at Lyndhurst.

Environmental initiatives

Seagrove features a wide range of innovative environmental features, including:

- “Rain gardens” planted with selected wetland species are located in every street, acting as natural filters for stormwater, as well as beautifying Seagrove’s streetscapes (see page 4 for details).
- 4,500 litre rain water tanks connected to toilets and a garden tap in every home are projected to save over 10 million litres of drinking water every year as well as reducing the amount of stormwater entering the bay (page 4).
- Seagrove’s 23-million-litre, computer-designed wetland with its specially selected wetland plant species to naturally clean stormwater before it enters the bay (page 5).
- Seagrove’s underground LPG network is projected to save over 3,000 tonnes of greenhouse gas emissions each year by reducing demand on electricity, and can be converted to natural gas in the future (page 7).
- Energy-efficient street lighting powered by accredited green energy reduces energy use by 48% compared with conventional street lighting, and reduces greenhouse gas emissions to zero (page 7).
- Six-star energy efficient display homes (page 8).
- Pedestrian- and bicycle-friendly urban design – including a new footpath connection to Thompson Avenue – encourages healthy alternatives to the use of private vehicles (page 8).
- Extra-wide streets – up to 25 metres wide – allow space for indigenous trees to grow, linking parks and creating corridors for wildlife (page 10).
- Seagrove’s eight acres of planned landscaped parks – featuring mature eucalypts, boardwalks, barbecues and children’s play equipment – encourage homeowners to appreciate the natural environment (page 10).
- Seagrove’s existing mature eucalypt trees – including woodland of regional conservation significance – are protected by parks, the careful location of infrastructure, and by building envelopes on home sites (page 10).
- The landscaping of Seagrove’s parks and streetscapes involves the planting of approximately 2,500 indigenous trees, 50,000 indigenous mid- and ground-storey plants and 30,000 wetland plants (page 12).
- Seagrove – with Phillip Island Landcare – is upgrading the Anderson Road biolink from Settlement Road to the Ventnor Koala reserve with a walking path, revegetation and weed management (page 12).
- Existing overhead powerlines on Settlement Road – between McKenzie and Anderson Roads – were replaced with underground power to allow mature trees space to grow and allow unobstructed views of the bay from Seagrove (page 12).
- Every purchaser is offered a complimentary twelve-month membership of Urban Landcare and 30 seedlings grown from indigenous seed at the Barb Martin Bush Bank (page 13).
- Seagrove promotes issues such as local fauna and flora, responsible pet ownership, sustainable gardening, recycling, and energy saving measures through its web site, newsletters, and advertising (page 13).
- Indigenous, water-wise demonstration garden on the corner of Settlement Road and Seagrove Way (with the support of Urban Landcare and Envirofund – page 13).
- Homeowners are encouraged to plant indigenous plants, which provide habitat for native species including birds and frogs. Plant species recognised as environmental weeds cannot be grown at Seagrove (page 14).

All reasonable care has been taken in preparing this information. However, the owners of the land (the vendors) and Southern Sustainable Developments Pty Ltd (the developer) disclaim all liability should any information or matter in this document differ from any contract for sale of the land or the actual development. Interested parties should obtain professional advice.



Water Sensitive Urban Design

At Seagrove, an integrated series of water sensitive urban design measures work together in order to achieve Best Practice Environmental Management Guidelines.

1. Rainwater tanks

Every home at Seagrove is required to have a minimum 4,500 litre (1,000 gallon) rainwater tank connected to toilets and a garden tap.

Connecting the tanks to a constant source of demand, such as toilets, maximises the available capacity in the tanks at any time to capture rainfall. (A full rainwater tank can't capture rain.)

The tanks have a water quality benefit by reducing suspended solids and nitrogen entering the stormwater system.

Rainwater tanks also reduce demand on drinking water. The tanks at Seagrove are projected to save over 10 million litres of drinking water every year.

2. Rain gardens

Rain gardens – or bioretention pits – are located in every street in Seagrove and are incorporated into the streetscape landscaping. A system of 50 rain gardens is to be distributed throughout the estate when complete.

Seagrove's rain gardens are designed to act as miniature ephemeral wetlands – each only 5m²

in area. During rain events, the rain gardens fill with water, and then slowly empty into Seagrove's underground stormwater system.

The rate at which the rain gardens empty is critical, in order to allow the selected plant species time to remove nitrogen and phosphorous from stormwater. The rain gardens at Seagrove are constructed with graded filter sands and specially selected gravel one metre deep and surrounded by geotextile fabric. The physical properties of the gravel and filter sands control the rate at which water in the rain garden empties into Seagrove's underground stormwater system.

The plant species used in Seagrove's rain gardens are:

- Carex appressa* Tall Sedge
- Carex gaudichaudiana* Fen Sedge
- Eleocharis acuta* Common Spike-sedge
- Juncus amabilis* Hollow Rush
- Juncus gregiflorus* Green Rush
- Melaleuca ericifolia* Swamp Paperbark
- Poa labillardieri* Common Tussock - Grass

The rain gardens are surrounded by terrestrial planting including:

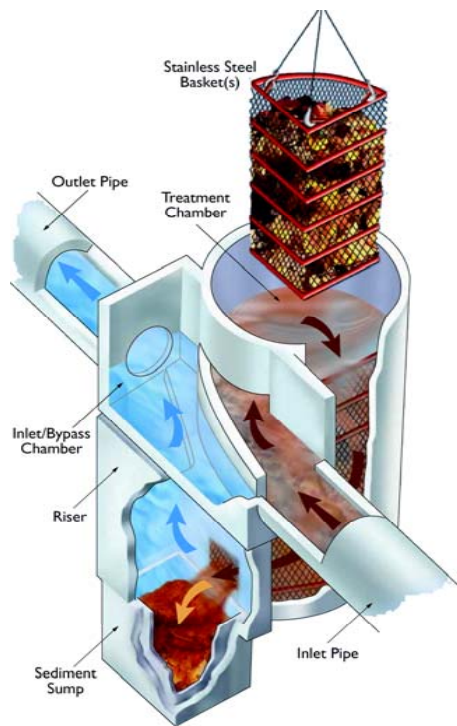
- Dianella revoluta var. brevicaulis* Black-anther Flax-lily
- Isolepis nodosa* Knobby Club-rush
- Lepidosperma gladiatum* Coast Sword-sedge
- Lomandra longifolia* Spiny-headed Mat-rush
- Patersonia occidentalis* Long Purple-flag
- Poa labillardieri* Common Tussock Grass
- Stylidium graminifolium* Grass Trigger-plant



Images –

(left) Australian Wood Duck *Chenonetta jubata* in the Seaberry Creek Park wetland

(above) Rain garden and energy efficient street light



Images –

(above) Cutaway diagram of a gross pollutant trap (image courtesy Rocla Pipeline Products)

(right) Seaberry Creek Park master plan

3. Pollutant traps

Before entering the wetland, stormwater must first pass through one of six gross pollutant traps (see left).

Installed underground, these large (4m x 3.3m x 3.5m) devices remove litter, oils and sediments from stormwater. A treatment chamber removes oils and floating pollutants, while litter is trapped in large stainless steel baskets that can be removed for periodic cleaning.

4. Settling ponds

There are two settling ponds in Seagrove's wetland. One is at the south end of the wetland (near Kingfisher Way), and the other is in the centre, under the bridge. The two ponds are connected by an ephemeral stream.

The settling ponds are open bodies of water, designed to settle large particles from stormwater before it enters the wetland.

Together with the gross pollutant traps, the settling ponds perform an important function. Wetlands will perform poorly if gross pollutants and coarse sediments are not removed prior to the wetland treatment.

5. Wetland

Seagrove's wetland is approximately 7,500m² in area, and contains some 19,000 wetland plants.

Beyond the settling pond under the bridge, a series of curved, rock gabion weirs define the different parts of the wetland. Alternating bands of deep and shallow wetland are surrounded by ephemeral wetland. This is the macrophyte

zone, which is responsible for most of the pollutant removal. (The large white nets visible in the wetland have been installed to keep the young wetland plants safe from hungry ducks.)

The plant species used in the different areas of the wetland are:

Ephemeral Wetland (0-0.5m deep)

Carex appressa Tall Sedge

Carex gaudichaudiana Fen Sedge

Crassula helmsii Swamp Crassula

Cyperus lucidus Leafy Flat Sedge

Eleocharis acuta Common Spike-rush

Juncus amabilis Hollow Rush

Juncus gregiflorus Green Rush

Poa labillardieri Common Tussock Grass

Shallow Wetland (0-0.1m deep)

Baumea arthropylla Fine Twig-rush

Baumea articulata Jointed Twig-rush

Bolboschoenus medlanus Marsh Club-rush

Eleocharis acuta Common Spike-sedge

Schoenoplectus validus River Club-rush

Villarsia reniformis Running Marsh-Flower

Deep Wetland (0-0.3m deep)

Eleocharis sphacelata Tall Spike-rush

Potamogeton tepperi Floating Pondweed

Schoenoplectus tabernaemontani River Club-rush

Triglochin procerum Water Ribbons

Submerged Wetland (0-0.65m deep)

Potamogeton crispus Curly Pondweed

Potamogeton ochreatus Blunt Pondweed

The wetland outflow is controlled to allow the wetland storage to fill and slowly empty over 72 hours giving the pollutant-removal process time to act.

When full, the wetland holds 23 million litres of water. During storm events – up to a one-in-one-hundred-year event – the wetland has been designed to act as a retarding basin, so that the maximum flow rate into the downstream stormwater system is no more than that of the original farmland prior to development.

Performance

The performance of all of the treatment measures – referred to as the treatment train – was modelled using MUSIC (Model for Urban Stormwater Improvement Conceptualisation) computer software developed by the Cooperative Research Centre for Catchment Hydrology at Monash University. The performance was then benchmarked against Best Practice Environmental Management Guidelines developed by CSIRO.

Each year, the overall treatment train is projected to reduce the pollution load entering the downstream stormwater system (and ultimately Western Port Bay) by:

22.7 tonnes of suspended solids (78%)

39.2kg of phosphorous (63%)

204kg of nitrogen (46%)

6.5 tonnes of gross pollutants (96%)





Innovative street lighting

Seagrove's street lights are powered by accredited green energy and incorporate a range of technologies including 42W compact-fluorescent lamps, high-efficiency electronic ballasts, and optically-efficient luminaires.

The compact-fluorescent lamps produce a more natural colour distribution than traditional 80W mercury-vapour (MV) lamps, improving visibility at night time. The optically-efficient luminaires provide higher lighting levels where it is needed (despite the 42W compact-fluorescent lamps producing slightly fewer lumens than the 80W MV lamps). The combination of compact-fluorescent lamps and optically-efficient luminaires also produces significantly less glare. This is an important consideration in an ageing society, as the eye becomes increasingly sensitive to glare with age.

The unique, architecturally designed street lighting columns complement Seagrove's contemporary, elegant style.

Seagrove's energy-efficient street lighting reduces power consumption by 48% and greenhouse gas emissions to zero. Energy use from street lighting is reduced by a projected 12,000kWh every year.

Gas to every home

An underground LPG (gas) network connects every home at Seagrove. (Natural gas is not available in Cowes.) Residents receive savings of over 40% compared to purchasing LPG in cylinders¹, as well as increased convenience.

Seagrove's LPG network is projected to save over 3,000 tonnes of greenhouse-gas emissions each year by reducing demand on electricity, and is able to be connected to natural gas should this become available in Cowes in the longer term.

Homes at Seagrove are required to install five-star, high-efficiency, gas hot water or five-star, solar-gas hot water. (This requirement is not mandatory in the Dianella, Lomandra, Park View or Water View releases.) Compared with conventional electric hot water, five-star gas hot water can reduce greenhouse gas emissions by 70% (and gas-boosted solar by 85%).

The underground LPG network is to connect all homes to a 30,000 litre storage facility on Ventnor Road. A temporary storage facility is currently located near the end of Lomandra Drive. This will ultimately be replaced by the larger Ventnor Road facility.

¹ The price paid for gas at Seagrove is 14.2% lower than the current Elgas domestic price for in-situ fill LPG (as charged by the Elgas branch closest to Seagrove), which is itself approximately one-third less than the cost of gas delivered to the home in cylinders. Gas meter charges cannot exceed the average market rate for hire of similar meters as charged by natural gas suppliers in Victoria.

Energy provider Elgas has a 15-year lease on the storage facility. After this, control of the storage facility transfers to the local water authority – Westernport Water. This allows Westernport Water to open the contract for supply up to competition among other energy providers, to ensure the best possible price for gas in the long term.

Six-star display homes

All display builders at Seagrove – Beach House Constructions, Coldon Homes, Langford Jones Homes and Simonds Homes – have agreed to achieve a six-star energy rating in their display homes at Seagrove.

Construction activities

All material from the construction of Seagrove’s wetland – over 50,000m³ – was retained on site. This obviated the need to transport material off site, significantly reducing energy use and associated carbon emissions. Earthworks were minimised by a design that responded to the natural contours of the site.

Distorted grid urban form

Seagrove’s street network has been designed to maximise permeability in order to reduce average vehicle trip lengths and to encourage walking and cycling.



Excellent solar orientation

Lots at Seagrove have been designed to achieve excellent solar orientation, while their generous size (average area of 880m²) allows greater siting flexibility to achieve good solar access. The explanatory booklet accompanying the design guidelines includes information for purchasers on how to make their home more energy-efficient.

Images –

(left) Energy-efficient street light featuring a compact fluorescent lamp and optically efficient luminaire

(above) Six-star energy efficient display house – Beach House Constructions



Landscape design

Landscape plays a critical role at Seagrove. Its multi-award winning landscape architects were involved from project's outset in determining the overall design response to the site. This was a deliberate strategy to ensure continuity and consistency of design philosophy, from the broad design response to the landscape detail design.

Seagrove's layout was carefully designed to maximise the use of the topography and retention of existing trees throughout the development, largely within public open space areas. The street network creates a primary north-south spine through the site, linking all residents to the key open spaces.

Seagrove's extensive network of open space accounts for almost 10% of the overall site area, and has been designed to provide maximum opportunities for residents to enjoy Seagrove's superb natural environment, especially its prolific native birdlife. This is a key aspect of Seagrove's philosophy of engaging the community around a common appreciation of the environment.

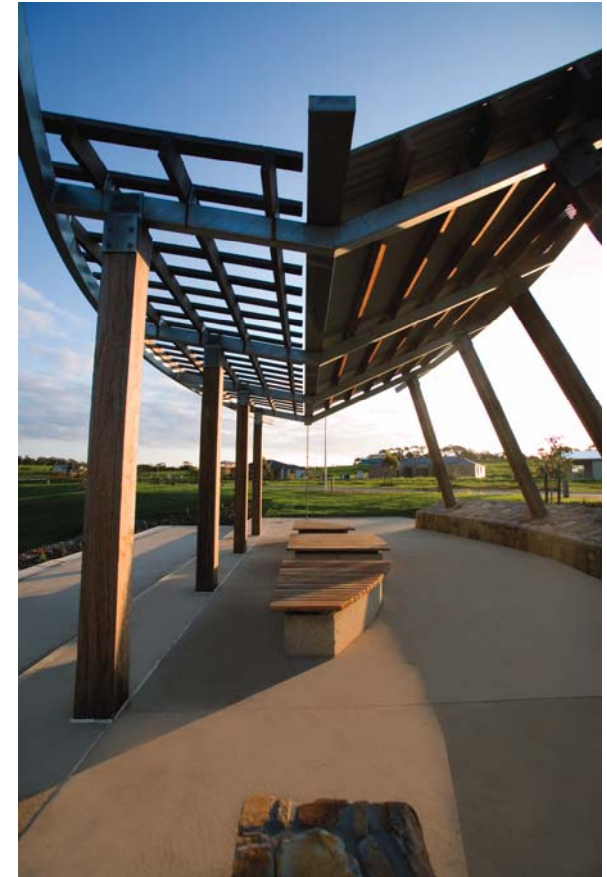
The coastal character of the land is reflected in Seagrove's informal yet contemporary style. Bold geometry, with large radii and simple, elegant structures, complements the organic shapes of the streets, which respond to the natural contours of the land. Seagrove's landscape reflects and reinforces its commitment to the environment through the use of indigenous species and natural materials.

In Seaberry Creek Park – the first and largest of the planned network of three parks – a bridge link through the open space ensures the wetland is central to people's experience of the site. This is further reinforced by extensive boardwalks suspended above the wetland, and walking trails linking a series of open spaces designed to accommodate a range of unstructured activities, from ball play and kite flying to exploration of rocky waterways or simply sitting and taking in the view.

A strong motif of overlapping leaf forms has driven the wetland design and created the opportunity for a rich pattern of stepped wetland cells that provide the water quality treatment function. Porous and non-porous gabion walls help define the wetland shape, providing a defined, but nevertheless soft, form.

In the north-west corner of the park, a striking picnic shelter echoes the leaf motif of the wetlands.

In Seagrove's extra-wide streetscapes, extensive rain gardens planted with native ephemeral wetland species form an integral part of the landscape design. These are complemented by mulched garden beds featuring massed plantings of indigenous groundcovers, and copses of native trees that will be quite dense upon maturity, reducing surface temperatures and the temperature of run-off from roadways, as well as creating viable fauna links through the development.



Images –

(left) Seaberry Creek Park

(above) The picnic shelter in Seaberry Creek Park echoes the overlapping leaf motif of the wetlands



Revegetation

Over 2,500 indigenous trees, 50,000 indigenous mid- and ground-storey plants, and 30,000 wetland plants have been incorporated into Seagrove's landscape design.

Tree species include:

Acacia melanoxylon Blackwood

Allocasuarina verticillata Drooping Sheoke

Banksia marginata Silver Banksia

Eucalyptus obliqua Messmate

Eucalyptus ovata Swamp Gum

Eucalyptus viminalis spp. *Pryoriana* Manna Gum

Melaleuca ericifolia Swamp Paperbark

Protecting existing vegetation

The integration of native vegetation is critical to the character of Seagrove.

Existing vegetation is preserved in public open space, and through the careful alignment of streets and infrastructure.

Formerly a horse paddock, Seagrove Park contains remnant, eucalypt woodland of high conservation significance. These trees are to be protected and enhanced by over 5,000m² of mulched garden beds, with massed plantings of indigenous groundcovers. Public access under these trees is to be discouraged, allowing trees to senesce and regenerate naturally, while minimising risk to park users from falling limbs. This

approach encourages the retention of hollow-bearing trees – a key habitat for wildlife.

A 5m wide landscaped buffer has been created along Seagrove's western boundary to protect and enhance the adjoining, 800m long biolink connecting the existing residential areas of Cowes to the Ventnor Road Koala Reserve managed by the Phillip Island Nature Park.

Revegetation and weed management works are being undertaken within the biolink in cooperation with Phillip Island Landcare.

Further landscaped buffers are located on Seagrove's southern and eastern boundaries, achieving a transition from the regionally significant eucalypt woodland to Ventnor Road (the urban growth boundary) and the rural land beyond, and providing a fauna link to Seagrove Park.

Along Seagrove's northern boundary, existing overhead powerlines were replaced with underground power to allow mature trees space to grow and also to allow unobstructed views of the bay.



Images –

(left) One of two boardwalks in Seaberry Creek Park

(above) Cushion Bush *Leucophyta brownii*



Community involvement

Phillip Island enjoys a unique natural environment, and the island's community derives a large part of its identity from its relationship with this environment. This has been consistently reinforced at Seagrove through the promotion of sustainability issues, such as local fauna and flora, responsible pet ownership, sustainable gardening, recycling, and energy-saving measures.

The issue of sustainability and the environment, while worthy of promotion in its own right, has also been identified as the common theme around which community bonds can be built or strengthened. In particular, membership of Urban Landcare provides new residents to the island with a forum within which to create new links and friendships.

The desire to engage the community in this way informed design decisions at Seagrove. One of the principal reasons for incorporating rain gardens in every street was to serve as a daily reminder for residents of the importance of caring for the environment. This generates a greater sense of community ownership of, and involvement in, sustainability issues.

Seagrove's extensive network of open space – which accounts for almost 10% of the overall site area – was designed to provide maximum opportunities for residents to appreciate Seagrove's superb natural environment, especially its prolific native birdlife.

Urban Landcare

Engendering a sense of community is a high priority at Seagrove. Ongoing community engagement is considered critical if the project's sustainability initiatives are to be successful in the longer term (ten or twenty years into the future).

All purchasers at Seagrove are provided with a complimentary 12-month membership to Urban Landcare. Urban Landcare is a program of the established Landcare movement that addresses issues of sustainable living relevant to an urban membership.

As members of Urban Landcare, Seagrove residents receive a site visit from a Landcare project officer who is able to provide advice on:

- Water-wise gardening
- Placing rocks and branches in gardens for lizards and frogs
- Establishing native grass lawns that use less water and stay green during summer
- Establishing a pond to encourage frogs and birds

Residents also receive a voucher for 30 native plants grown from indigenous seed from the local Barb Martin Bushbank, regular newsletters and can participate in "practical sustainability" seminars.

Urban Landcare – with the support of Envirofund – is also creating an indigenous, water-wise demonstration garden on the corner of Settlement Road and Seagrove Way.

Celebrating the environment

Seagrove's entry features two bronze Great Egrets *Ardea alba* set on a simple rock plinth and surrounded by native landscaping. This public sculpture was selected instead of the more typical, overtly branded "entry statement". The endangered Great Egret is a species of state conservation significance – as well as being featured in Seagrove's visual identity.

Seagrove also celebrates its natural environment through the selection of street names, such as Dianella Way, Lomandra Drive, Currawong Close, Sweet Bursaria Lane, and Pobblebonk Place. The web site provides information on each of the species that lends its name to Seagrove's streets.

Guidelines for homeowners

Seagrove's design guidelines include simple, commonsense measures to protect the environment for the enjoyment of everyone. They address energy and water efficiency, as well as the planting of recognised weed species.

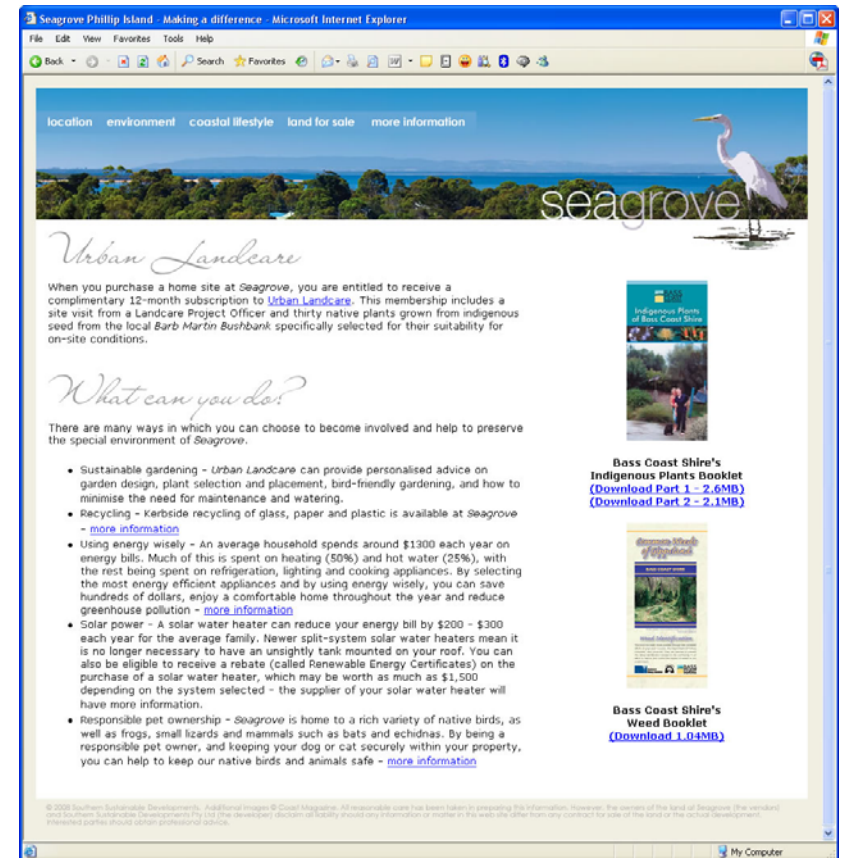
Seagrove's design guidelines also encourage built form with a "contemporary underlying architectural theme, with roof lines, proportions and building shapes that convey a combination of simplicity and distinction without fussy detail and decoration". The design guidelines address a comprehensive range of issues, including articulation of façades, limits on the relative sizes

of upper storeys (to preclude "boxes"), and controls on external materials, set-backs and garages. The guidelines also preclude front fences in order to reinforce Seagrove's open and park-like character.

For home sites located within the regionally significant eucalypt woodland in the south of Seagrove, Trust for Nature (Victoria) conservation covenants are to address issues including the keeping of pets, the planting of non-indigenous flora, the removal of fallen timber, the prohibition of trail bikes and 4WDs, and wildlife permeable fencing. These home sites are a minimum of 4,000m² in area, and have building envelopes to ensure that dwellings may only be constructed in existing, naturally formed clearings within the woodland.

Getting involved

For more information on sustainable living at Seagrove and how to become involved, please visit www.seagrove.com.au or contact Urban Landcare on 03 5952 5403 or email landcare@waterfront.net.au.



Images –

(above) Bronze sculpture of Great Egrets *Ardea alba* at the entry of Seagrove

(right) Information in how to become involved at www.seagrove.com.au



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