



SEA02 Consultants - Principal Guy Lane

Portfolio of Projects

Pronounced like CO₂ the greenhouse gas, SEA02 is the consulting arm of Australian environmental scientist Guy Lane.

Pictured here at COP28 in Dubai, Guy holds a BSc (Hons) Environmental Science (Griffith University) and a Master of Business (QUT). He is also founder and chairman of Australian registered charity Vita Sapien: vitasapien.org

Through principal Guy Lane, SEA02 draws on extensive and diverse experience. Over the years Guy has traded under different names and worked with various institutions.

Some of Guy's brand include:

- My Clean Sky
- The Funnel Exchange
- reeFUEL Biodiesel
- SEA02 Consultants

Some of the institutions that Guy has worked for include:

- Great Barrier Reef Marine Park Authority
- Big Sky Energy
- Solar PV Commercial
- C&B Group

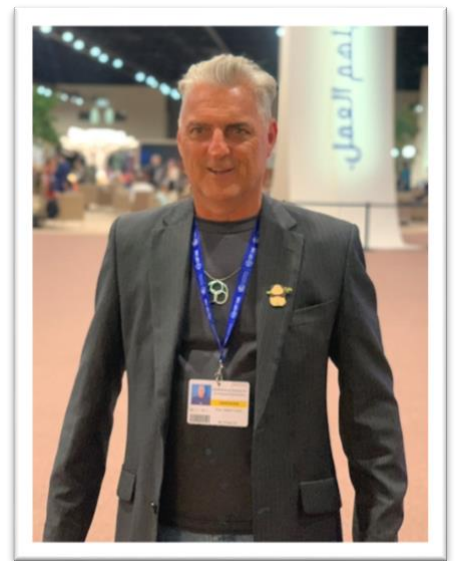
The portfolio below details some of the many experiences that Guy Lane brings to his work with SEA02 Consultants.

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Portfolio of Projects

1 Bright Point.....	4
Albedo Effect.....	4
All-Safe Energy.....	4
Beneath Hill 60.....	4
Besser Masonry	5
Bitcarbon	5
Blue Australasia.....	5
Cafalo Pty Ltd.....	5
Carlyle Gardens	6
CBD COP15.....	6
Cleanership.....	7
Climate Change in Townsville	7
Colliers International	7
Control Technologies International	7
COP28 Dubai.....	8
eee\$	8
Ergon Energy	8
EST.....	8
Executive Briefing	9
Fiction Writing	9
Floating Wedding Pavilion	9
Funnel Exchange	10
Gigaton Carbon	10
GIS Officer.....	10
Greenhouse Challenge.....	10
Hutchinson Builders	11
James Cook University.....	11
Knight Frank	12
LAWMAC.....	12
Marine Prawn Aquaculture.....	12
My Clean Sky	13
NE Waste.....	13
Nil By Mouth	13
NMG Group	13
OTEC	14

Parks & Carbon.....	14
PHEW.....	14
Prime Carbon	15
Proactive-recarbon-ciliation	15
reeFUEL Biodiesel	15
Reefball Australia.....	16
Skytrans.....	16
Solabola	17
Space Program	17
Solarsphere	17
Strand Wind Project	18
Sunheat	18
Synthetic Fuel	18
Sustainability TODAY.....	18
The Long Future Foundation	18
Tidal River Litter Corral.....	19
Trees for Fleet.....	19
Townsville City Council	19
Townsville Enterprise.....	19
Waste Audits.....	20
Vita Sapien Organisation.....	20

1 Bright Point

Queensland property development firm, Meridien, purchased an electric GEM Car for their apartment block at 1 Bright Point in Nelly Bay, Magnetic Island, North Queensland. SEAO2 assisted Meridien to acquire a permit to drive on a public road. This required interactions between Meridien, the Local Authority, the police, and the Department of Transport. Unfortunately, the Transport Department rules were so onerous that the permit only allowed the vehicle to cross the council road between Bright Point and the Nelly Bay ferry terminal. At least, Meridien was now able to pick its guests up at the ferry terminal in a zero emissions car.

Albedo Effect

The Albedo Effect refers to sunlight reflecting off white surfaces and being absorbed as heat by dark surfaces. SEAO2 worked with Townsville City Council and painted a tin shed that was used for servicing garbage trucks. The white paint reflected so much solar energy from the tin that there was a noticeable reduction in heat in the shed. By reflecting heat back into space, it is possible to cool buildings and reduce the Urban Heat Island Effect.

All-Safe Energy

All-Safe Energy ran a franchise of energy efficient products retail outlets around Queensland. SEAO2 conducted a carbon audit of five All-Safe shops and an audit of the carbon savings associated with the use of the products that were sold. This allowed us to present the argument that the existence of All-Safe Energy Efficient Products was a net benefit from a carbon perspective. SEAO2 produced a marketing booklet with this information and attended an exhibition at the Queensland Parliament on behalf of All-Safe where we shared our findings to government ministers.

Beneath Hill 60

SEAO2 performed a carbon audit on the production of the Australian movie Beneath Hill 60. The movie was shot in Townsville with much of the cast and crew coming from Sydney. The audit considered air travel emissions, fuel consumption for vehicles and generators, offices, hotels, and other emission sources. Through SEAO2's carbon offset arm, My Clean Sky, we also offset the emissions to make the production carbon neutral.

Besser Masonry

Besser Masonry ran a cement block manufacturing plant in Townsville. SEAO2 enrolled Besser Masonry into the Greenhouse Challenge program and later worked on a project with them called *The Carbon Neutral Block*. This involved a carbon audit of the cement block manufacturing process tied with a carbon offset service. SEAO2 also connected Besser Masonry with Control Technologies International and oversaw the collection of data on the gas-powered kilns to assess the suitability of CTI's solar thermal technology to provided energy to the cement block manufacturing process.

Bitcarbon

In September 2013, SEAO2 Principal Guy Lane took an interest in the energy consumption of the Bitcoin mining network and through his research was the first to understand and publicise the mechanism by which Bitcoin's energy demand was so high and rising. He wrote a 2,000-word essay on the matter, and a press release that was carried in the US online media outlet Bizjournal in December 2013 with the title: *Bitcoin's carbon footprint a 'clear and present danger' to Earth, says BitCarbon founder*. Simply put, Bitcoin and other cryptocurrencies based on the 'proof-of-work' authentication mechanism include a feature called 'difficulty' that creates a correlation between the dollar-value of the cryptocurrency and the energy consumption (read carbon footprint) of mining it. Guy Lane found that if Bitcoin came to be worth \$1 million each, then the Bitcoin mining network would swallow a third of the global electricity supply. Guy's observations about the correlation between price and energy consumption have since been verified by a peer reviewed science paper.

Blue Australasia

Blue Australasia Pty Ltd was a company established by Dr Martin Blake to promote the ideas of Gunter Pauli and the Blue Economy approach to sustainability. Working with Dr Blake, SEAO2 incorporated Blue Australasia Pty Ltd, built the website, designed the business cards, and managed events. Pauli's Blue Economy is one of the referential frames that Guy Lane uses in his work.

Cafalo Pty Ltd

Cafalo was a Sydney-based property development firm who owned an iconic piece of real estate in the centre of Townsville. Over time, several green buildings were proposed for the site. SEAO2 collected all the designs and built a website to showcase the possibilities for the site. The remuneration for this work was return airfares to China to attend the Dezhou Solar Congress.

Carlyle Gardens

SEAO2 assisted publicly listed company Prime Trust in its expansion of the Carlyle Gardens retirement village in Townsville. Carlyle Gardens was growing from about 350 retirement homes to a total of 700. SEAO2 advised on ways to make the new homes more sustainable. As a result, five energy efficiency improvements for the new homes were mandated:

- Light coloured roofs
- Vacuum tube solar hot water
- CFL down lights instead of halogen
- Windworker roof ventilation
- Centimeter in-home energy meter.

SEAO2 estimated that these changes would have led to an estimated reduction in energy demand and CO2 emissions of about 50%. SEAO2 also introduced Zingspace to the development who implemented sophisticated water sensitive urban design. At the time, the expansion of Carlyle Gardens was one of the most innovative sustainability urban development projects in Australia combining best practice in energy and landscaping. SEAO2 also produced a 3D computer model using Sketch-Up of the new homes that showcased the energy efficiency features and demonstrated this model to prospective homeowners at the Carlyle Gardens open day.

SEAO2 also reached out to numerous technology development firms seeking to integrate the latest energy and IT technology into the Carlyle Gardens development.

The Global Financial Crisis forced Carlyle Gardens' parent company Prime Trust into receivership and the building work ceased in early 2009 with only about 70 new homes built.

Fortunately, evidence remains of this excellent initiative. Today, flying into Townsville, the light-coloured roofs of Carlyle Gardens new estate are clearly visible.

CBD COP15

SEAO2 Principal Guy Lane managed the submissions process to have registered charity Vita Sapien Organization accepted as NGO Observers for the United Nations Convention for Biological Diversity (CBD). This permitted access to the CBD COP-15 event in Montreal, Canada in December 2022. Guy and five other Vita Sapien delegates attended the historic event where the Kunming-Montreal Global Biodiversity Framework was signed. This accord sets out the broad strokes of the relationship between human civilization and biodiversity for the coming decade. This event was valuable insight into the benefit of the COPs and advised how to approach getting access to Climate COP-28 in Dubai in late 2023. Amongst the Vita Sapien delegates were representatives of Facing Future and the Climate Emergency Forum. Getting passes for these groups was a strategic play to firm-up the relationship with these two climate communication organisations.

Cleanership

In 2015, SEAO2 Principal Guy Lane conceived the idea of the. Cleanership is a proposal to refit a 75-metre tuna-purse-seiner vessel with high temperature incinerators and a plastics-to-diesel plant. The ship would then steam to remote shorelines with a crew to remove plastic from the beaches and either store the plastics aboard for later recycling, dispose of it through thermal oxidation, or by producing diesel fuel to power the ship. On each voyage, a cohort of volunteer Cleanership Cadets would join the vessel to undertake beach and ocean clean-up operations and learn the *Cleanership Curriculum*: a comprehensive sustainability and self-empowerment training program. Back of envelope calculations suggested that the Cleanership would cost about \$25 million to buy, refit and operate for the first three years. Guy found a sea captain who would be a suitable skipper, and an engineer who could oversee the incinerator and plastic to diesel technology selection. Guy continues to seek project funding to advance this initiative.

Climate Change in Townsville

SEAO2 was commissioned by NGO Creek-to-Coral to investigate the projected impacts of climate change on water quality in Townsville. It was found that capital cities of Australia had been modelled for climate change but not Townsville, and so we advised our client to commission CSIRO to run a climate change model specifically for the local area. As the client was not budgeted for this, SEAO2 pitched the idea to various other parties and raised enough money for the climate model to run. With this report in hand, we were able to interpret the data into layman's language. Working with the water quality team we were able to assess water quality impacts for 2015, 2030 and 2070. SEAO2 then went on to build a website with the findings of the report.

Colliers International

SEAO2 undertook a greenhouse audit of the Townsville office of Colliers International and developed a carbon offset program totalling 100 tons CO₂e using CFL lamps. In this program, the Colliers maintenance manager was given many CFL lamps which he used to replace incandescent lamps in Collier's rental properties. SEAO2 also drafted a press release for Colliers about the project and this resulted in news media in the Townsville Bulletin.

Control Technologies International

Control Technologies International (CTI) is a firm based in Brisbane who were developing an innovative solar thermal energy technology that included parabolic dish, salt energy storage, and energy transformation using Stirling Engine. SEAO2 worked with CTI introducing various potential commercial partners and represented CTI's technology at the Clean Technology Showcase

at the UNEP Conference in Dubai. SEAO2 also bought a CTI technician to Townsville to canvas opportunities for the technology in the town.

COP28 Dubai

In December 2023, SEAO2 Principal Guy Lane attended United Nations COP28 climate talks in Dubai, United Arab Emirates. These were the first UN climate talks openly hosted by an oilman, Sultan Al Jaber, the CEO of Abu Dhabi National Oil Company, signalling that the fossil fuel industry had finally managed to take over humanity's primary international vehicle to address climate change. Guy attended COP28 under the badge of the International Society for Ecological Economics. At COP28 Guy launched Vita Religion, an initiative of Vita Sapient Organization.

eee\$

In 2007 SEAO2, Guy worked with Rolf Roth, the founder of the eee\$, and helped to launch this innovative currency system. eee\$ was designed as a full reserve sustainable currency system based on the Swiss WIR bank model. SEAO2 assisted with branding, inclusion of sustainability considerations, and operationalization of the idea. eee\$ was launched in Townsville and traded for some time before Rolf returned to Switzerland to continue developing the project.

Ergon Energy

Ergon Energy is the north Queensland regional energy utility. SEAO2 worked with Ergon Energy on the Energy Demand Management Pilot program. This initiative sought to use Ergon's engineering skills *behind the meter*. This means that Ergon worked with commercial clients to develop business cases and provide project management for energy efficiency improvements. SEAO2's role was to help recruit organisations into the program. SEAO2 also wrote a press release for Ergon Energy and worked with the utility on an energy performance contract program for James Cook University and Townsville City Council.

EST

In February 2006, SEAO2 Principal Guy Lane attended the United Nations Environment Program (UNEP) Environmentally Sound Technology (EST) Showcase in Dubai, United Arab Emirates, and exhibited a range of environmental technologies. The EST Showcase was a vast hall filled with hundreds of cleantech firms showing off their wares. This was a side-event to four UNEP conferences, including the UNEP COP. SEAO2 secured two 3x3 meter pavilions and represented six cleantech firms from Australia.

Executive Briefing

SEAO2 Principal Guy Lane worked with the Long Future Foundation to design and run Executive Briefings on Long Future Sustainability. Delivered in April 2015 and March 2016, the Long Future Executive Briefing was an intensive half-day masterclass in Long Future Sustainability that sought to boost knowledge, passion and drive to empower executives in the transformation of society to the world we all deserve. The event consisted of three one-hour sections, followed by networking session. Each part consisted of power-point, spoken word, interactive participant activities, videos, unique audio/visual content, and music.

Fiction Writing

Guy Lane is a prolific fiction writer with over a dozen self-published works including:

Novels: 40,000 words plus

- The Oil Price
- Intervene
- The Last Days Before God
- The Moogh
- The Martian Cat
- Aquaria
- Steam Ship Yongala

Novellas: 20 – 40,000 words

- The Plume
- Love in the Age of Bitcoin
- The Statue of Liberty

Novelettes: 10 – 20,000 words

- The Christmas that Killed Mister Hopkins
- Marshall Cover Scuttles a Clownship
- Mister Bluesky
- Thus Spoke the Anthronaut

The titles are available as paperbacks and ebooks via guylane.com

Floating Wedding Pavilion

SEAO2 assisted a Singapore-based firm in a submission to provide a floating wedding pavilion for a Singapore resort. SEAO2's role was to integrate sustainable design and technology and into the project. To this end, we proposed that the design be representative of a local endangered species. The Giant Clam which was accepted as the design theme. In addition, SEAO2 also proposed a range of clean-tech inclusions to the design including building-integrated photo-voltaic, dehumidifiers, LED lighting etc. SEAO2 also pitched for electric watercraft to be included in the project and a moon-pool in the

middle of the building where professional mermaids could make an appearance at the wedding.

Funnel Exchange

In 2009 SEAO2 Principal Guy Lane co-founded The Funnel Exchange (Funnel) with a partner in the shipping industry. As the shipping industry accounts for about 3% of global emissions, Funnel sought to combine SEAO2's expertise in carbon with the partner's expertise in shipping. Funnel had an early win when the venture was just a few weeks old, in being shortlisted for the 2009 *Green Shipping Initiative of the Year* at the *Sustainable Shipping Awards* in London. In 2010, through the Funnel Exchange, Guy Lane sat on a panel of Richard Branson's Carbon War Room to discuss: *Unlocking the Barriers to Investment in Eco-Efficient Marine Technology*. He also moderated a workshop session on the subject with executives in the cruise ship and petroleum oil industry.

Gigaton Carbon

SEAO2 Principal Guy Lane designed Gigaton, a business model to finance energy efficiency improvements in shipping. With about 3% of global carbon emissions coming from shipping, and with shipping being excluded from international treaties on climate change, a new model was required to kick-start the decarbonising of the global shipping fleet. Gigatonne Carbon included an innovative model that integrated a proprietary carbon credit standard with an investment bank. Through the Funnel Exchange, SEAO2 Principle pitch the idea to a shipping company and a shipping services company. Whilst these two firms were interested in the concept, we were unable to find the funding to build the Gigaton Carbon model.

GIS Officer

Through the Great Barrier Reef Marine Park Authority Guy provided GIS products and services to GBRMPA's Representative Areas Program. Working in a team of five people in the GIS department, Guy provided hard copy maps based on digital data sets. The work also included the integration of aerial photos of coral reefs and hydrological survey data into the GIS platform.

Greenhouse Challenge

SEAO2 managed core aspects of the Greenhouse Challenge program in North Queensland on behalf of the host agency, Townville Enterprise. SEAO2 recruited firms into the program, conducted carbon audits on the firms, made recommendations to cost-effectively reduce emissions, and oversaw the firms sign a Cooperative Agreement with Commonwealth Government. Based in Townsville, North Queensland at the time, SEAO2 focussed on eco- and

marine-tourism operations. Some of the firms that SEAO2 bought into the Greenhouse Challenge program include:

- Besser Masonry
- Cairns International Airport
- Daintree Eco-Lodge (ecotourism resort)
- Great Adventures (marine tourism)
- Green Island (ecotourism resort)
- Hinchinbrook Island (ecotourism resort)
- Quicksilver Cruises (marine tourism)
- Undersea Explorer (marine tourism)

Hutchinson Builders

SEAO2 advised Hutchinson Builders on green building elements for their Townsville HQ. Hutchinson had bought an old warehouse and were refitting it into a modern office space. SEAO2 worked with the hydraulic, electrical, and air-conditioning engineers, encouraging them to use this project as a test case for the very best in class sustainability options. The engineers designed into the project water tanks, super-efficient lighting, daylighting, motion sensors, efficient air-conditioning and A/C zoning, white roof, solar film window tint, and solar PV. At the time, the solar PV was the largest commercial grid-tie solar PV in North Queensland.

Through SEAO2's input, the building became recognised as an interpretation centre for solar power and energy efficiency in an office environment. SEAO2 built a simple 3D model of Hutchinson's building in Google Sketchup and undertook solar modelling to ensure that the solar panels were so located as to not be shaded.

SEAO2 developed a website to communicate the project and on numerous occasions led school groups into the building allowing the children to see a green office in use. This tour was referred to as the *Hutchinsolar Experience*. The venue was also used to stage media events relating to solar power.

SEAO2 wrote multiple press releases and co-ordinated TV and print news stories about the Hutchinson project. In addition, we worked on award submissions, and Hutchinson Builders won two awards for the building: TCC sustainability Award, and Master Builders Queensland.

SEAO2 was in the process of designing a children's sustainability education program designed around the building - The Hutchinsolar Experience - with the intention of winning a United Nations Sustainability Prize. Unfortunately, the Global Financial Crisis ended the discretionary cash flow for this project.

James Cook University

SEAO2 worked with the James Cook University Halls of Residence at undertake a carbon audit and to design a carbon offset scheme that included the replacement of incandescent lamps with LED lights.

Knight Frank

SEAO2 was commissioned by Knight Frank, an international property consulting firm, to assess sustainable development options for the Thuringowa City Council Riverside Parklands housing development. SEAO2's report was submitted by Knight Frank for consideration by the then Thuringowa City Council. It is believed that this report was a cause in the subsequent development of the Itara development which has many characteristics described in the SEAO2 report.

LAWMAC

Lawmac is the North Queensland Local Area Waste Management Advisory Committee, an organisation group of regional councils. On two occasions SEAO2 attended LAWMAC annual gatherings to act as Master of Ceremonies for part of the meeting of 40-plus waste management staff. On one of the events, the consideration was the LAWMAC Bus, a dilapidated old Leyland that someone had thought would make a good travelling sustainability display. SEAO2's mission was to try and breathe innovation and creativity into the project. This was partly achieved by keeping a tally of the \$1 fines levied on anyone who referred to the vehicle as a bus. This was one instance when Guy Clean Sky, the charismatic sustainability showman came to town.

Landmark Forum

In 2005, Guy Lane attended the Landmark Forum program in Sydney. A few months later, he returned to sit the Landmark Advanced course. In 2008, Guy redid the Landmark Forum. The Landmark Forum is a personal development program offered by Landmark Worldwide, designed to help individuals identify and break through self-limiting beliefs and patterns. Conducted over a three-day seminar and an evening session, it uses a blend of group discussion, guided introspection, and philosophical inquiry to encourage transformative insights about life, relationships, and personal responsibility.

Guy Lane holds the Landmark Forum in very high regard, viewing it as an invaluable tool that fosters open and honest communication among its graduates. He appreciates how the program creates a shared language and framework, enabling participants to connect more authentically and engage in meaningful dialogue. In addition, the Landmark Forum provides practical tools to help individuals overcome common human challenges, including fraught thoughts and limitations in creativity and boldness.

Marine Prawn Aquaculture

Through C&B Consultants, Guy came to be a regional expert in marine prawn aquaculture in North Queensland. His duties included the design of prawn farms, hydrographic survey of rivers and creeks to advise nutrient modelling

of flows to waterways, and liaison with Commonwealth and Queensland government departments including GBRMPA, EPA, Marine Parks, and Local Authorities.

My Clean Sky

SEAO2 Principal Guy Lane founded My Clean Sky Pty Ltd as a carbon offset service that targeted air travel. SEAO2 raised \$10,000 seed capital from a local travel agent to kick off the project. My Clean Sky developed air travel carbon calculators including one that could interface with the Galileo travel booking system that most travel agents use. Through My Clean Sky, Guy worked with Cairn's based regional airline Skytrans to implement a carbon offset scheme. Read more in Skytrans section, below.

My Clean Sky also conducted a carbon audit for the film production of the movie Beneath Hill 60 that was shot in Townsville, and provided a carbon offset service using soil carbon credits from Prime Carbon.

NE Waste

NE Waste provides waste management services for seven local authorities in the NSW Northern rivers region. SEAO2 assisted NE Waste in research into alternative uses for a handful of difficult to process waste-streams in the region. These included treated and untreated timber, mattresses and solar PV panels.

Nil By Mouth

Through the Long Future Foundation, SEAO2 was commissioned by Healthy Land and Water to investigate opportunities to retrieve plastic litter from the Brisbane River using the infrastructure in the river (jetties, bridges, etc). SEAO2's research identified that there was no suitable technology for retrieving litter from tidal rivers - rivers in which the water flows back and forth. So SEAO2 invented the *Tidal River Litter Corral* which has two one-way gates allowing litter to enter an area enclosed within two booms. A demonstration site was identified in St Lucia, Brisbane, and it remains to be seen whether a corral will be built there. The project's title, Nil by Mouth, relates to the aspiration that no plastic shall depart the mouth of the Brisbane River.

NMG Group

NMG Group are commercial property developers operating across Queensland. One of their projects was 19 Stanley Street in Townsville CBD. SEAO2 was engaged as the construction work was coming to an end and the developers were looking to sign-on tenants. SEAO2 advised on green-building design elements including replacing the proposed roof colour with a white roof. SEAO2 wrote media releases and managed two TV news media interviews including a

story about the electric crane on site running on Green Power - Electric Yellow Crane Runs on Greenpower - and a story about the white roof.

OTEC

SEAO2 took an interest in the technology platform called OTEC - Ocean Thermal Energy Conversion - and wondered if it would be suitable for powering Townsville. OTEC creates electricity by exploiting the temperature difference between cold deep ocean water brought to the warm sea surface in tropical regions. SEAO2 found a JCU physicist who was prepared to research the technology and deliver his findings to an audience. SEAO2 organized the OTEC Workshop in the boardroom of the Townsville Port Authority. At the time, SEAO2 Principal Guy Lane was the North Queensland representative of SENG the sustainable engineering society, so the workshop was co-badged SEAO2 and SENG. The OTEC event was attended by representatives of Connel Wagner, GBRMPA, JCU, Reef CRC, GHD, MGF-NQ, JCU, SMEC and Townsville Port Authority. The upshot of the workshop was that OTEC was an unsuitable technology for Townsville because of the vast upwelling of cold water it would create equivalent in volume to the Burdekin River in full flood.

Parks & Carbon

Parks & Carbon is an initiative that Guy Lane SEAO2 pitched to Townsville City Council Parks Services through SEAO2 to perform a carbon audit on the production of town water used in Council's extensive network of public parks. This initiative went on to include a range of other initiatives including trails of various types of grass to find the least water-thirsty amongst them. These projects involved working closely with Manager Parks Services and staff. Guy Lane from SEAO2 delivered a presentation to a conference on Parks and Gardens, describing the findings of the Parks & Carbon program.

PHEW

SEAO2 initiated a project with Townsville City Council to convert one of their 2nd Generation Toyota Prius fleet cars to Plug in Hybrid. SEAO2 learned that American firm Plug in Hybrid Conversion (PICC) were visiting Australia to do some conversions in South Australia. PICC agreed to extend their stay and visit Townsville. The conversion was a success with the vehicle achieving about a 40km range on battery alone. SEAO2 also worked with council staff on the artwork and Thematic Communication messaging for the vehicle's livery and oversaw the vehicle getting wrapped with the artwork.

The PHEV - Plug-in Hybrid Electric Vehicle - was based in a carport of a solar-powered house and got around 40 kilometers on the battery filled with solar powered electricity. This prompted the tagline: *Fresh Fuel Delivered Daily*. SEAO2 also built a simple website for the project that including links to the documentation necessary for others to undertake the same process. A later assessment by SEAO2 found that the vehicles fuel consumption had dropped

from about 5.5 litres per 100km to about 3.0. Due to some of the tight deadlines in this initiative, it gained the moniker PHEW.

Prime Carbon

In 2007, Guy Lane from SEAO2 delivered a speech to the Townsville Rotary Club and introduced the concept of the Townsville Carbon Exchange. Just as Charters Towers had a stock exchange, so should Townsville have a carbon exchange.

This conversation had some part in the development of carbon credit aggregator Prime Carbon that was based around the soil carbon sequestration associated with the use of pro-biotic soil conditioners produced by VRM. Working with Prime Carbon, SEAO2 wrote a suite of draft carbon credit methodologies for submission to an Australian Government carbon credit scheme. SEAO2 also wrote communication documents that were presented to Government Ministers to advance soil carbon sequestration in Australia. Through this period, SEAO2 Principal Guy Lane established the air-travel carbon offset service My Clean Sky and used Prime Carbon credits in this service.

Proactive-recarbon-ciliation

On behalf of Girringun Aboriginal Corporation, SEAO2 developed Uncook Cardwell, an initiative to carbon offset the emissions associated with the Caring for Country Conference in Cardwell, 2008. SEAO2 undertook a carbon audit of the planned conference (about 800 tons CO₂) then coordinated the acquisition and distribution of 2,000 CFL lamps to replace incandescent light globes. The lamps were installed in Cardwell homes by members of the Girringun Aboriginal community. The initiative was referred to as *Proactive-recarbon-ciliation*. SEAO2 wrote a media release and coordinated a press conference on the initiative.

reeFUEL Biodiesel

With a business partner, SEAO2 Principal Guy Lane created *reeFUEL biodiesel* in 2006. Biodiesel is a diesel fuel made from vegetable and animal oils and fats. reeFUEL imported Australian Standard biodiesel from Brisbane to Townsville in B-Double 40,000 litre tankers.

In Townsville, the fuel was retailed to the public, plus earth moving contractors and trucking companies. reeFUEL Biodiesel was delivered to clients by a 18,000-litre delivery truck emblazoned with a large Yellowfin Tuna which was the company logo. *reeFUEL Biodiesel* was also available via a bowser at a service station in South Townsville.

reeFUEL was the only biodiesel retailer in Australia to sell B100 or straight biodiesel - most biodiesel was sold as B20 a 20% blend with petroleum diesel.

Guy's role was marketing, sales and corporate communication included earned media in print and TV. Some of the press releases picked up by the media included:

- *Cow Powered Trucks Deliver Milk in Townsville*
- *Big Chipper Runs on Chip Oil*
- *Big Rigs Flip-flop Fuel Up and Down the Coast*

The Bio Boys was the lead story in Townsville CityLife's September 2006 edition. Originally, Guy Lane and his business partner were interviewed by a journalist working for the magazine. However, the original copy was deemed (by Guy) unsuitable, so he negotiated with the magazine editor to ghost-write the story. Guy's draft was subsequently accepted with just a few minor edits. The cover image of the article shows Guy Lane and business partner posing with a borrowed red Peugeot 307. Powered by reefFUEL biodiesel, the Peugeot 307 was the most carbon efficient production car in Australia at the time.

reeFUEL traded for about 8 months before falling petroleum oil prices and changes to fuel tax legislation made the business uncompetitive.

The big lesson of reefFUEL was that biodiesel had the potential to replace petroleum diesel 100% but it needs to be made from the right feedstock, such as cultivated algae. Biodiesel ought not be made of food - such as coconut oil, canola oil and tallow - as was the case for reefFUEL biodiesel.

Reefball Australia

SEAO2 worked with artificial reef builder Reefball Australia and conducted a carbon audit of the artificial reef building process. We then provided carbon offsets to neutralise the emissions by buying and retiring UNFCCC CDM carbon credits.

Skytrans

Through My Clean Sky, Guy Lane partnered with regional airline Skytrans to conduct a carbon audit of its air routes and implement a passenger-facing carbon offset program. Skytrans operated a fleet of turboprop commercial aircraft, and the initiative began with a detailed review of the airline's fuel burn data to establish a clear picture of its operational carbon footprint.

Occupancy rates across routes were then assessed to calculate per-passenger, pro-rata emissions for each flight. Using this data, SEAO2 supported the Skytrans IT team in integrating a carbon offset calculator into the airline's online ticketing system.

Passengers booking flights could opt-in to offset their emissions via the *My Clean Sky* service, which retired Prime Carbon soil carbon credits sourced from North Queensland. The system functioned seamlessly for approximately three years and represented a best-practice example of voluntary carbon offsetting in regional aviation.

Unfortunately, Skytrans ceased operations in 2015 due to pressures from the Global Financial Crisis, bringing the program to an end.

Solabola

SEAO2 conceived, designed, built, and operated the Solabola, a solar powered *WOW! Factor* that puts noise and colour and motion to the photovoltaic effect. This was achieved by attaching a solar panel to an electric fan that blows balls around a vertical, clear tube. Very simple and very, very effective. The Solabola was first displayed to the public at the Townsville Eco-fiesta festival where children and adults alike were left aghast at the stunning display of whirling balls and bottle caps flying out of the tube and into the air.

Space Program

Beginning in November 2014 Guy undertook an intensive research effort that sought to understand and communicate the ecological impacts of space activity. The data now resides on the Long Future website. The research identified a range of important issues including:

- Stratospheric soot
- Space tourism
- Re-entry debris
- Cosmos 1818
- Plutonium & uranium in orbit
- Reuseable launch vehicles
- Launch accidents
- Ozone depletion

See the website: longfuture.org/projects/space/

Solarsphere

SEAO2 assisted solar technology start-up *Projekt Sierra* that was headed by the late Richard von Braun. SEAO2 renamed the project Solarsphere and worked with it until the death of Richard Braun. Solarsphere was designed to be a very large, very inexpensive mirror for concentrating solar power projects made of PETE (coke bottle material). SEAO2 worked with engineers to design the receiver and engaged in negotiations with a plastics company regarding potential joint venture. Guy Lane presented Solarsphere at a CSP conference at the Queensland University of Technology. Organised introductions to regional development bureau, tour of the concrete manufacturing plant and cane mill, nickel processing plant, seeking potential power purchasers for the device. Work on the project ceased with passing of von Braun, and difficulties associated with the ownership of the patents.

Strand Wind Project

In 2006, SEAO2 initiated, and project managed the purchase, delivery, and installation of a 6kW grid-connected vertical axis wind turbine (VAWT) on the Townsville waterfront. The device was an Italian designed the Ropatec WRE.060 - one of only a handful in the world. The Strand Wind Project was designed as a public demonstration of renewable energy and a tourism resource. It also functioned as a technology incubator as it was the first grid connected VAWT in Queensland. After some teething problems with a bearing were resolved the VAWT worked flawlessly for years before it was finally taken down by a direct hit from a cyclone.

Sunheat

SEAO2 raised \$250,000 for solar thermal technology development firm, Sunheat. Sunheat planned to use parabolic solar troughs to collect solar energy, thermal oil as heat transfer, salt as heat storage, and a radial piston engine as the energy generator. Sunheat was able to produce the radial piston engine before the project founder passed-away and the development work ceased.

Synthetic Fuel

SEAO2 was engaged to by a company investigating the possibility of establishing a synthetic fuel plant using car tyres as fuel in Townsville. SEAO2 brokered meetings with Townsville City Council directors and private waste management firms to assess the viability of the project. SEAO2 honoured our responsibility to the client as per our contract, and when the client refused to pay for the service, SEAO2 sued him and won.

Sustainability TODAY

Between 2007 and 2011, Guy Lane delivered a fortnightly, four-hour training session called *Sustainability Today* to new members of the Townsville City Council Staff. *Sustainability Today* covered big picture sustainability issues such as climate change, biodiversity loss and human population growth. The course also advised on how to implement sustainability ideas at home, such as through energy conservation, green purchasing, renewable energy, and recycling. The name *Sustainability Today* was pertinent as the content was driven by stories taken from the news of the day.

The Long Future Foundation

In 2014, SEAO2 Principal founded the registered charity *The Long Future Foundation*. The Long Future Foundation was conceived as a sustainability think-tank and a vehicle to conduct research into esoteric sustainability

challenges such as cryptocurrency and the ecological impact of space activity. Through the Long Future Foundation, Guy Lane wrote and presented board-Executive Briefings on sustainability.

Tidal River Litter Corral

SEAO2 was commissioned to work on a project for environmental NGO Healthy Land and Water. The task to identify infrastructure in the Brisbane River that could be used to harvest litter. One of the observations was that Brisbane River is a tidal river, so a lot of the litter trapping technologies would not be suitable, as the trapped litter would be liberated as the tide moved this way and that. To counter this, SEAO2 invented a new technology called the *Tidal River Litter Corral*. This was proposed to be anchored between the shore and the leg of a jetty and consist of two net walls and two hinged gates. The arrangement would allow litter into the corral on the flood and ebb tide, but the litter would not be able to escape.

Trees for Fleet

Working between Council's sustainability and fleet departments, SEAO2 developed a program called Trees to Fleet that sought to link the carbon sequestration associated with Council's tree planting initiatives with the carbon emissions associated with Council's vehicle fleet. SEAO2 undertook carbon emissions audit of council's vehicle fleet and also a carbon sink assessment of the trees. Through the program, a service agreement was initiated where Council's fleet was rendered carbon neutral by assignment of the tree planting sequestration.

Townsville City Council

SEAO2 worked across Townsville City Council's departments on a wide range of sustainability projects described above.

- Fleet Services
- Environmental Services
- Property Services
- Community Services
- Waste Management

Townsville Enterprise

Townsville Enterprise is the North Queensland regional economic development organisation based in Townsville. Townsville Enterprise won the contract to run the Commonwealth Greenhouse Challenge project in the region. SEAO2 recruited firms to the program, undertook carbon audits and later oversaw the firms signing co-operative agreements with the Commonwealth Government.

Waste Audits

SEAO2 performed two waste audits for Townsville City Council. The first for Community Services involved an audit of the waste generated at the annual Eco-fiesta festival. This was conducted in view of the public. The second was conducted for Waste Management as subconsultants to consulting firm GHD. In this initiative, we project managed a waste audit from dump trucks at the Vantassal Street Landfill. This task involved SEAO2 overseeing five contract staff and addressing a media interview with the Deputy Mayor.

Vita Sapien Organisation

In August 2016, SEAO2 Principal Guy Lane had an insight that the root of the climate and ecological crisis was what we believed, not what we knew. This began a multi-year investigation into the idea that culminated in a registered charity that later came to be known as Vita Sapien Organization. Vita Sapien's mission is to foster 53 million people around the world to undergo a powerful spiritual enlightenment to our Living Planet and to become environmental changemakers. Guy Lane's consulting work through SEAO2 helps to fund Vita Sapien Organization's ambitious activities.