

Strategy and Assets Committee

Meeting Date: Tuesday, 09 April, 2019

Location: Council Chambers, City Administrative Centre, Bridge Road, Nowra

Attachments (Under Separate Cover)

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ENERGY MATTERS

Project Title:

Callala Wastewater Treatment Plant Solar Farm Business case for 5MW Solar PV Power Plant

Summary:

Shoalhaven Water has investigated the feasibility of a 5MW solar farm on the Callala wastewater treatment plant site to meet a proportion of Council's electricity consumption. The site is favourable for the development of a solar farm and Shoalhaven water engaged industry consultants to develop a preliminary business case.

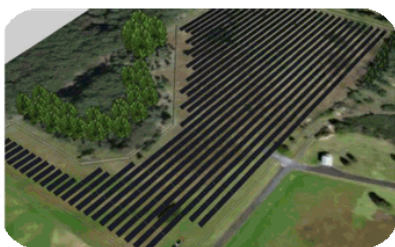
The business case is marginal on a purely financial basis over the 30 year life of the plant. However when including other social benefits, such as cost of carbon, the project becomes attractive.

There are outstanding issues regarding how the retail electricity agreements may work.

Callala Wastewater Treatment Plant



- 24ha of potential space available
- SCC own the land
- Proximity to 33kV Network Substation
- North facing slope with no shading
- Mostly cleared available area
- Existing Roads and Infrastructure
- Enclosed Secure Site
- Long plant operational life



Benefits:

Financial (marginal), electricity sourced from renewables, enviro (CO2 saved), projected payback ~10 years, indirect, social and environmental benefits.

Project Team:

Andrew Truran, Business Analysis Consultant, SCC
Darren O'Connell, Energy Management Coordinator, SCC
Patrick Denvir, 100% Renewables, Industry Consultants
Barbara Albert, 100% Renewables, Industry Consultants
David West, Direct Sourced Energy, Industry Consultant

Progress:

Nov 2017	Preliminary feasibility and consultant engagement	AT
Jan-Apr 2018	Developed preliminary business case in conjunction with 100% renewables team.	AT, DOC, PD, BA, DW
May 2018	Presented project to Sustainable futures committee.	AT DOC
Jun 2018	Investigating major risks associated with the retail agreements and future general supply contract.	AT DOC
Jul 2018	Talking to retailers and industry experts regarding new models of general supply with remote and local renewables components	AT
Sept 2018	Communications with other Council's, including Newcastle, to gauge progress	AT
Jan 2019	Project on Hold pending business case and investment proposal	AT



ENERGY MATTERS

Project Title:

Flow Power Retail Electricity

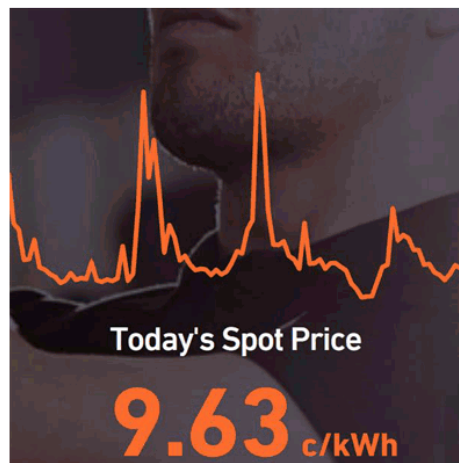
Wholesale electricity direct from the market

Summary:

Flow Power are a new generation of electricity retailer. They offer exposure to the wholesale market price of electricity (with options for hedging and reducing risk).

This option is advantageous for sites with flexibility regarding when electricity is consumed. It's the 'time of use' that determines the price and there are large savings available with individual site optimisations.

Flow power also offer a demand management product whereby high loads are signed up to be available for shedding during network peaks, with generous financial rewards for doing so.



Benefits:

Electricity cost savings through load shifting and wholesale exposure, paid to take loads offline during peak periods. Optimisation of plant operations to suit market prices.

Project Team:

Andrew Truran, Business Analysis Consultant, SCC
Darren O'Connell, Energy Management Coordinator, SCC
Carmel Krogh, Group Director, Shoalhaven Water

Progress:

May 2108	Initial discussions with Flow Power and referees received	AT, CK
Jun 2018	Conversations with existing Flow Power users positive and following up with potential business case.	AT
Jul 2018	Investigating the potential impact of large sites options for wholesale pricing	AT
Sept 2018	Most effective option is likely to be taking the very large pumping stations onto the wholesale market, leaving the remainder with fixed pricing.	AT
Nov 2018	NDA signed with flow power and have shared interval data for Burrier Pump Station. Awaiting analysis.	AT
Jan 2019	Flow Power proposal for Burrier Pump Station inconclusive. Too many variables and risks for a critical asset at this stage	AT
Mar 2019	Project Closed	AT



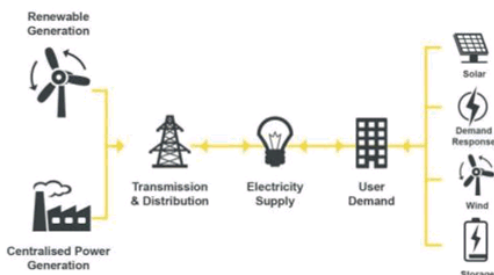
Project Title:
Open Energi - Demand Management
Feasibility Study

ENERGY MATTERS

Summary:

Open Energi are a UK based company who offer a service called Dynamic Demand 2.0. Dynamic Demand 2.0 uses artificial intelligence and machine learning to deliver data-driven savings and revenues through interconnected electricity demand management.

They have thousands of sites signed up in the UK, including large water utilities, and they are effectively managing the demand in the network to provide robust savings to existing clients and are looking to expand into Australia.



Benefits:

Electricity cost savings, paid to take loads offline during peak periods. Optimisation of plant operations to suit market prices.

Project Team:

Andrew Truran, Business Analysis Consultant, SCC
Andrew McVey, Section Manager, Operations

Progress:

May 2018	Data pack sent to Open Energi for initial feasibility study.	AT
July 2018	The dataset sent was missing key information for some WWTPs. This data has now been updated and re-sent. Awaiting response...	
Sept 2018	Waiting for response and will be followed up in Oct	AT
Oct 2018	Preliminary business case proposal received and discussions with UK water utilities held.	AT
Nov 2018	Negotiated to share the cost of a detailed feasibility study for two sites, Vincentia and Ulladulla WWTPs. Awaiting updated proposal	AT
Feb 2019	Open Energi Representatives visited Shoalhaven Water to discuss a proposal	AT
Mar 2019	Further data sent to Open Energi with regards to Nowra and Bomaderry WWTPs as more load required for AEMO.	AT



ENERGY MATTERS

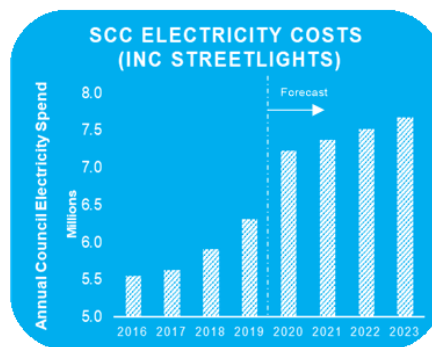
Project Title: General Supply Electricity Contract Electricity agreement beyond 2020

Summary:

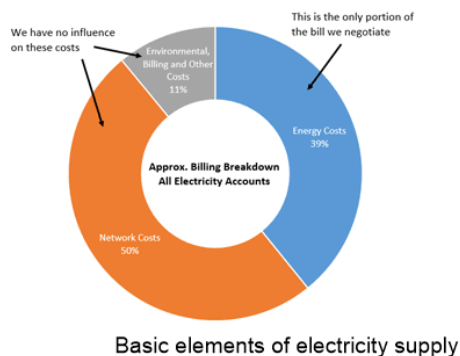
SCC is currently experiencing very favourable contracted electricity rates for its 43 'Large Sites' (>100MWh/yr) and 538 'Small Sites' (<100MWh/yr).

The Large and Small Sites contracts are both with Origin Energy and expire on 31 Dec 2019. The current contracts were negotiated through Local Government Procurement (through a pool of 54 Councils in total). Depending on when these negotiations take place in the energy market cycle will determine the price of the electricity offer, which if adopted, is locked in for the next 2-3 years from 2020 onwards. Renewable energy could form a portion of the energy mix Council purchases from 2020.

It is expected that we may face a large relative increase in electricity rates (from industry forecasts). This is a complex space and this project will work with Council's procurement team to help facilitate the best outcome for Shoalhaven Council.



Forecast Increase in Electricity Costs



Basic elements of electricity supply

Benefits:

Electricity supply cost savings, future security of energy supply rates.

Project Team:

Andrew Truran, Business Analysis Consultant, SCC
Darren O'Connell, Energy Management Coordinator, SCC
Paul French, Supply Chain Manager, SCC
Tony Holmes, Customer Service Manager, SCC
Michael Pennisi, CFO, SCC

Progress:

May 2018	Initial discussions with LGP and SCC Procurement indicates that LGP will be negotiating for 2020 prices in late 2018.	AT, DOC, PF
July 2018	Investigating options to source a percentage of electricity from renewable sources through retailers.	AT
Sept 2018	LGP contract extended for other councils on contract to end 2020. Full renegotiation to commence in 2019 for 2020 onwards	AT
Jan 2019	Cross functional working group established for procurement of electricity	AT

HPERM Ref: D19/88105

For more information contact: andrew.truran@shoalhaven.nsw.gov.au



ENERGY MATTERS

Project Title:

Shoalhaven Water Behind-the Meter Solar PV Feasibility and Business Case

Summary:

This project is investigating the feasibility of local generation solar PV systems on some of Shoalhaven Water's suitable assets.

Behind-the-Meter generation is financially more attractive when compared to a larger solar farm because the network charges can be avoided at the site (along with the energy charges and a small reduction in demand charges, if applicable). However, this approach is restricted in size as it must take into account the local load profile and the percentage of solar generation consumed on site.



Benefits:

Electricity savings, short payback periods, electricity sourced from renewables, enviro (CO2 saved), projected payback ~5 years

Project Team:

Andrew Truran, Business Analysis Consultant, SCC
Darren O'Connell, Energy Management Coordinator, SCC

Progress:

May 2018	High level feasibility of four sites with different tariff structures.	AT
Jun 2018	Two sites identified (Bamarang WTP & Berry WWTP) for further analysis.	AT
July 2018	Tender process documents started. Initial discussions and research underway on small battery storage option for Berry WWTP.	AT, DOC
Sept 2018	Procurement Plan prepared and additional RFQ documents being drafted.	DOC
Nov 2018	RFQ released on VendorPanel, closing 13 th December. Compulsory site visits on 4 th December.	AT
Dec 2019	No Responses received through the VendorPanel	AT
Feb 2019	Public RFQ released on Tenderlink closing 1 st March	AT
Mar 2019	Seven submissions received, preferred tenderer chosen, proceeding with installation in April 2019	AT



Project Title:
Cities Power Partnership

ENERGY MATTERS

Summary:

Shoalhaven Council signed up to the CPP in 2017 and agreed to 5 pledges including to set city-level renewable energy targets, emissions reduction targets and sustainable energy policies to provide a common goal and shared expectation for residents and businesses. Pledges are reported on every 6 months to the CPP. A South-East NSW CPP Buddies Group, comprised of Shoalhaven, Kiama, Wingecarribee, Eurobodalla and Bega Council staff, was formed in early 2018 and has met a number of times. The group won the national Knowledge Sharing Award at the inaugural CP Summit held in Kiama in Oct 2018.



Benefits:

Independent support and networking with Australian local Councils on climate change mitigation and adaptation measures. Sharing of resources and peer support under the Buddies Program.

Project Team:

Darren O'Connell, Energy Management Coord, SCC
Andrew Truran, Business Analysis Consultant, SCC
Michael Smith, Environmental Planning, SCC



Progress:

May 2018	SE NSW Buddies Group first met face to face in Batemans Bay	DOC, MS
June 2018	Second meeting of SE NSW Buddies Group took place via teleconference	DOC, MS, AT
19 July 2018	Third meeting of the SE NSW Buddies Group took place via teleconference	DOC, AT
26 July 2018	Award application submitted for the 2018 Knowledge Sharing Award – Best Buddies category for the SE NSW Buddies Group	DOC
Sept 2018	Application submitted by Shoalhaven Council for the 'South East NSW Councils buddy group (NSW)' announced as the only Finalist for the Knowledge Sharing Award being presented on 18 Oct.	DOC
Nov 2018	The 'South East NSW Buddy Group' won the national Knowledge Sharing Award at the CPP Summit in Oct 2018. CPP Pledges to be reported to Strategy & Assets Committee after the disbandment of the Sustainable Futures Committee.	DOC MS
Mar 2019	A CPP Pledge Actions Progress Table has been prepared and circulated to the GDs to track progress on the 5 Pledges – HPERM REF D19/79018	DOC



ENERGY MATTERS

Project Title:

Electric Vehicle Charging Stations on Public Land Policy
Shoalhaven City Council

Summary:

Shoalhaven Council resolved to prepare a policy for Electric Vehicle (EV) Charging Stations on public land. This will assist in providing public authorities and private industry with guidelines for site selection, infrastructure requirements and other considerations. With an expected increase in the uptake of EVs within Australia in the next decade, EV drivers will need to rely on public charging points to reduce 'range anxiety'. A policy to provide guidance to third parties seeking to install EV charging stations on public land will help to ensure stations are sited appropriately, available to all EV users and boost regional tourism.



Benefits:

With the expected increase in EV charging stations across Australia in the next decade, Council is being proactive to ensure that any new EV charging stations on public land are suitably located and useable by the general public.

Project Team:

Darren O'Connell, Energy Management Coord, SCC
Gordon Clark, Strategic Planning Manager, SCC
Thomas Trezise, Strategic Planning Team, SCC
Michael Smith, Environmental Planning, SCC
David Paisley-Topp, Asset Construction, SCC

Progress:

May 2018	Initial meeting took place between Policy Planning, Energy Mgt Coordinator and Environmental Planning staff	DOC, MS, GC, TT
June 2018	Existing data gathered and draft policy commenced	DOC, MS, TT
June 2018	Second meeting of Working Group to review draft policy document	DOC, MS, TT
18 July 2018	Site inspection in Berry by project team	DOC, MS, TT
26 July 2018	Following up with NRMA on some criteria for EV Fast Charging Stations.	TT
Sept 2018	Draft policy prepared and circulated to Group Directors for comment by 28 Sept.	TT, MS, DOC
Nov 2018	Draft policy to be placed on public exhibition after Council resolution at Ordinary Meeting on 13 Nov 2018. Also resolved at same meeting for 3 EVs to be part of Council's fleet as a trial in 2019, along with EV charging infrastructure needs assessment.	DOC, DP-T, TT
January 2019	NRMA selects a private site in Berry to install an EV Charger; largely due to frustrated process relating to the use of public land.	
March 2019	Draft policy placed on public exhibition 12 Dec 2018 – 1 Feb 2019. Draft policy amended based on public exhibition – to be reported to Council's Development and Environment Committee in May 2019 for adoption as the final policy.	DOC, TT



ENERGY MATTERS

Project Title:

LED Streetlighting Upgrade - Accelerated

Summary:

Shoalhaven Council has been liaising with Endeavour Energy about a potential accelerated replacement program of streetlights with energy savings LEDs. Endeavour Energy's current policy when lights need routine or emergency replacement is to replace them with LED luminaires. This may take several years to fully replace all existing street lights to more energy efficient LEDs. As SCC pays for the electricity consumption of street lights, installing more energy efficient LEDs will save on running costs. The business case to accelerate this LED replacement program currently has a simple payback period of around 7-8 years due to SCC's current 'cheap' electricity contract rates. At this time therefore, the program is not that feasible and would require a capital investment of around \$2M.



**Endeavour
Energy**

Benefits:

Shoalhaven Council currently has around 10,500 Mercury Vapour streetlights (50 or 80 watts each). LED lamps have a wattage of 25 watts or less and therefore offer a large energy savings opportunity. However, due to the relatively low electricity prices that SCC currently experiences under the streetlighting contract (which expires in Dec 2019), the accelerated LED replacement program at a capital cost of around \$2M would have a payback of around 7-8 years (depending on LED model selected).

Project Team:

Darren O'Connell, Energy Management Coord, SCC
Andrew Truran, Business Analysis Consultant, SCC

Progress:

Feb 2018	Waide Elliot from Endeavour Energy supplied 'ShoalhavenCC_LED Rollout Estimate RESIDENTIAL ONLY' spreadsheet with the costs and business case for the accelerated LED replacement for streetlights in SCC	DOC
26 July 2018	Latest correspondence with Endeavour Energy was mid-May 2018 with no changes to LED upgrades.	DOC
Aug 2018	NSW Govt announced funding of \$12.5M towards upgrading of street lighting with LEDs	DOC
Nov 2018	Council continues to liaise with OEH re: funding guidelines for Tariff 5 rebates yet to be released.	DOC
March 2019	Webinar scheduled for 22/3/19 by OEH to provide update on public lighting rollout funding program	DOC

Shoalhaven
City Council
ENERGY MATTERS

Project Title:
Planet Footprint (soon to be known as Azility)

Summary:

Planet Footprint are engaged by Shoalhaven Council to gather, analyse and monitor Council's energy consumption. Through a package called 'Finance Footprint', PF also gather and check Council's energy and water bills and make arrangements for these to be approved and paid. PF also provide an online portal that Council staff can access to view electricity invoices, graphs of consumption trends in energy, etc. PF also supply a Quarterly Performance Report for Group Directors as part of ongoing energy monitoring.



Benefits:

PF is an aggregator of Shoalhaven Council's energy accounts (over 500 accounts) and produces results and reports on trends in energy consumption and costs. As this is a complicated task, there is some convenience in outsourcing this role. Note that PF will change its name to Azility on 3/4/19.

Project Team:

Darren O'Connell, Energy Management Coord, SCC
Andrew Truran, Business Analysis Consultant, SCC
Tony Holmes, Customer Service Manager, SCC
Danika Star, Service Manager, Planet Footprint
Patricia Hoerlein, Project Compliance Accounts, SCC
Sally Gorman, Accounts & Reporting Support, SCC

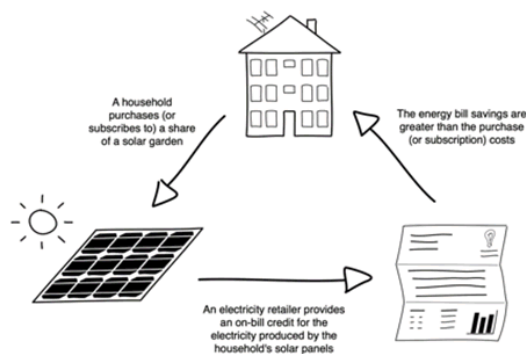
Progress:

May 2018	Quarterly Performance Report delivered to ShoalWater Group to ensure it is relevant to end user.	DOC, AT, TH
June 2018	Quarterly Group Directors Report issued by PF. DOC supplied comments back to PF to make report more usable to Directors	DOC, TH
26 July 2018	Quarterly Performance Review due in Aug and will cover SCC Aquatic Centres and Holiday Haven Tourist Parks	DOC, AT
Sept 2018	Performance Review delivered for SCC Aquatic Parks and Holiday Haven as part of energy efficiency staff training held on 23 Aug 2018	DOC, AT
Nov 2018	Meetings arranged with PF on 19 Nov with key Council staff to resolve some ongoing issues regarding GHG data, new dashboard analytics, SoE, Utilities Console, etc.	DOC, AT, TH, PH, SG
Mar 2019	New Yellowfin platform now used and reporting 'tags' and email alerts are being setup to improve Performance Reporting to key staff. Launch of new company name 'Azility' and website at https://www.azility.co/	DOC, AT

Project Title:
Social Access Solar Garden

Summary:

The Social Access Solar Garden project was a multidisciplinary team of researchers, Councils and other agencies investigating the potential viability of low income households accessing solar power. Shoalhaven Council, along with Repower Shoalhaven, identified a potential local site for a solar farm that was subjected to technical investigations. The prototype project was essentially a feasibility research study, attempting to identify a viable financial model that would enable 'locked out' people such as renters and low income earners, to enjoy the benefits of solar power. This project had a number of project partners including Byron Shire Council, Community Power Agency, Repower Shoalhaven and the Institute for Sustainable Futures (UTS).



Benefits:

Low income households, renters, etc. do not always have an opportunity to utilise rooftop solar power. This project investigates the viability of a solar garden to enable these customers to buy solar power from an off-site solar farm.

Project Team:

Darren O'Connell, Energy Management Coord, SCC
Kelie Clarke, Environmental Services, SCC
Andrew Truran, Business Analysis Consultant, SCC
Peter Herald, Electrical Engineer, SCC
Paul Keech, Director Assets & Works, SCC



Progress:

5-6 June 2018	A 2-day workshop was held at Shoalhaven Entertainment Centre as part of the Prototype Design stage of the project.	DOC, KC, PH, AT, RH
26 July 2018	Completion of legal considerations report, legal webinar and workshops	PH
Sept 2018	Final workshop proposed for 16 Oct 2018 to deliver all aspects of the project.	PH
Nov 2018	National workshop held in Sydney in early Nov to present all funded projects. Repower Shoalhaven liaising with Council to secure the disused North Nowra tip site for a 4MW solar farm.	PH, PK
March 2019	Repower Shoalhaven submitting grant application to Regional Community Energy Fund to build solar farm at either North Nowra Tip site or Sanitary Depot site.	PK, PH, DOC



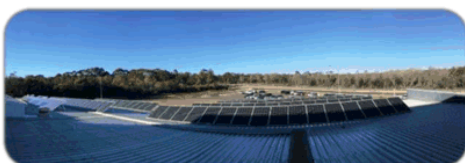
ENERGY MATTERS

Project Title:

Sustainable Energy Policy Shoalhaven City Council

Summary:

Shoalhaven Council has a draft Sustainable Energy Policy that identifies a future sustainable energy vision or objectives at both the corporate or community level. To help drive investment in clean and renewable energy, as well as reduce carbon emissions, Council pledged under the Cities Power Partnership in 2017 to 'set city-level renewable energy targets, emissions reduction targets and sustainable energy policies to provide a common goal and shared expectation for residents and businesses'. A comprehensive Sustainable Energy Policy will lead to a new Sustainable Energy Strategy that will set targets for clean energy and guide action towards energy savings and climate change mitigation for the Shoalhaven region.



Benefits:

Drives direction and investment in solar power, electric vehicles, climate change mitigation work, etc.

Project Team:

Darren O'Connell, Energy Management Coord, SCC
Gordon Clark, Strategic Planning, SCC
Kelie Clarke, Environmental Services, SCC
Stephen Dunshea, Finance, Corporate & Community, SCC

Progress:

May 2018	Initial meetings between relevant sections to discuss the way forward took place	DOC, KC, Strategic Planning
June 2018	Gathering existing data and commenced drafting of policy	DOC
July 2018	Sustainable Energy Policy drafted, submission to SFC	DOC, CK
Sept 2018	Draft Sustainable Energy Policy submitted to Ordinary Council meeting on 28 Aug 2018 to be placed on public exhibition prior to adoption. Resolved that the report be received for information only.	DOC
Nov 2018	Ordinary Council meeting of 13 Nov 2018 resolved to formulate a draft Sustainable Energy Policy for consideration by the Feb 2019 Strategy & Assets Committee meeting	DOC, General Manager & GDs
March 2019	Draft SCC Sustainable Energy Policy currently on public exhibition until 18 April 2019.	DOC, GM, GDs

Project Title:
**Ulladulla Leisure Centre – Upgrade to
Filtration – 25m Indoor & Therapy Pools**



SUSTAINABILITY INITIATIVES

Summary:



Ulladulla Leisure Centre's previous sand filters were approximately 20 years old and at the end of their effective service life, showing delamination of the filter shells, with a high likelihood of failure at any given time.

Two types of filtration were considered as acceptable options for this project:

- Pressure sand filtration
 - Pre-coat ultra-fine Diatomaceous Earth (DE) filtration
- These systems differ markedly in their filtration efficiency, plant size, and wash water consumption. The intent of the filtration system upgrade works was to install the specified Pre-coat filters while the facility remained open to the public, with minimal disruption to Centre day to day operations. The works were strategically planned and implemented in order to minimise required closure times.

Benefits:

- Pre-coat filtration is an extremely efficient process which filters more finely, resulting in higher water clarity and protection against modern chlorine resistant pathogens, like cryptosporidium and giardia - directly referenced within technical journals and NSW, ACT and QLD health standards
- Backwash water savings using pre-coat DE filtration instead of sand filtration, and including Total Dissolved Solids (TDS) control water use, are commonly in the order of 60% of a sand filtration system backwash
- Pre-coat filtration requires substantially less wash water consumption - given that future water costs will inevitably be costed / charged according to true economic value, low wash water consumption is of critical importance when considering filtration systems



Team Members:

Gary George – Assets & Works Project Manager
Drew Brown – Southern Leisure Manager (ULC)
Kevin Norwood – Shoalhaven Swim Sport & Fitness Manager

- Although bring a higher capital cost and a more sophisticated filtration process, the higher apparent cost is reasonably justified in terms of:
 - Reduced mains water consumption
 - Lower waste water disposal cost
 - Reduced heat loss - due to reduced heated water loss and required addition of cold mains water
 - Lower chemical costs - due to lower water loss ► lower chemical loss and no need for coagulating chemicals

Progress:

June18	Construction of a new structural floor slab outside the existing plantroom
July18	Installation of specified Pre-coat Filters within new filter plant area, complete with required infrastructure (monorail, VTS etc)
July18	Install new flow and return piping, terminating at strategic locations, in order to minimise 'closure time' for Ulladulla Leisure Centre
July18	Conduct an audit of existing plant to be reused - test, inspect and service (or, if necessary, replace with new) to requirements of their respective manufacturers' specification
July18	After successful commissioning and operation of new specified filters, redundant plant was removed - decommissioned filter media was disposed of as biological waste



SUSTAINABILITY

Project Title:

Waste Services – Sustainability Workshops

Summary:

In Waste we have been holding regular (usually spring and autumn) sustainability workshops for the community which include topics such as:

- Home composting (using food scraps and garden waste to produce compost)
- Worm Farming (producing compost and fertiliser through food scraps)
- Beeswax Wraps (re-usable wrapping for lunches)
- Furoshiki (Japanese eco fabric wrapping – using fabric instead of plastic bags)
- Backyard Chicken Basics (managing kitchen waste and producing fertiliser)
- Natural cleaning (using natural products for cleaning)
- Hand Weaving and Basket Making using Recycled Materials
- Altered Books – a recycling Story
- Healthy Soils for a Healthy life

We have also focussed on increasing recovery of recyclables from the Recycling and Waste Facilities, including the introduction 18 months ago of household problem waste recycling centres (for paints, fluorescent globes, gas bottles, smoke alarms, household batteries, etc.), and improved sorting of recyclable materials dropped off in mixed loads. We have improved the produced quality of shredded green waste by doing an additional screen, and the material is in great demand.



Benefits: empowering residents to adopt more sustainable practices in everyday life

Increased ability to recycle correctly

Increased awareness of waste services provided by Council

Increased community connections and social conscience

Project Team: David Hojem, Fiona Schreurs

Progress: increased number and diversity of workshops annually by 20%



Project Title:
Shoalhaven Indoor Sports Centre

SUSTAINABILITY

Summary:

The Shoalhaven Indoor Sports Centre (SISC) design team recognises that Environmental sustainability is one of the most important issues facing contemporary society. Accordingly, the team placed an emphasis on integrating best practice environmental design into the project and analysing the impact on our environment and importantly on the well-being of its occupants.

The following key objectives for the SISC were identified at the early design phase:

- Reinforce all of Shoalhaven City Council's Sustainable and Environment Policies
- Maximise the environmental benefit of the project, minimising the environmental footprint of the SISC
- Where possible educate and inform the building users/occupants and the community.
- Engage a simple yet integrated ESD design approach resulting in a high environmentally performing building.

Crucial to delivering an energy efficient building is applying passive design principles where possible, such as natural ventilation systems, good solar access and orientation, and controlled natural day lighting. This approach need not increase costs and is vital for achieving improved thermal performance, energy efficiency and optimum occupant comfort.

Environmentally Sensitive Design (ESD) Principles

Environmentally sensitive considerations have been integrated into the SISC design development. For instance:

- Natural Lighting Courts
- Natural ventilation systems provide cross flow cooling to the court halls,
- LED lighting products and motion control switching improve energy efficiency,



November 2018



Natural Lighting Courts 2,3,4



Natural Lighting Cafe

- Translucent roof panels and glazing introduce natural light into largest court hall,
- Precast concrete panels and insulation maximises the building thermal efficiency,
- Instantaneous natural gas water heating systems reduces energy wastage,
- Rainwater harvesting and the reuse in amenity flushing supplements town water supply, reducing water consumption.
- Use of sustainable materials for court floors decreases the reliability on natural growth timber species,
- Potential photovoltaic solar system design assists with the base load energy consumption on site,



Rainwater Harvesting Tank

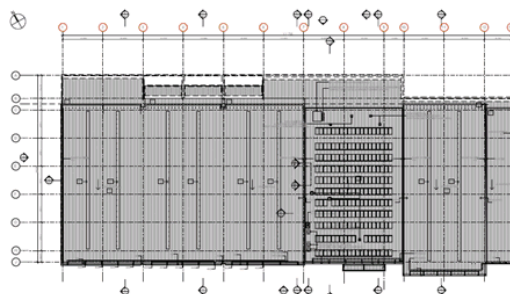
The stormwater management techniques applied to the design include Water Sensitive Urban Design (WSUD) responses such as stormwater detention and retention. Water quality improvement devices, rain gardens and adoption of swales rather than formal concrete lined channels.

An assessment has been undertaken based on the available roof area for a system that optimises solar production. The recommended system is summarised below:

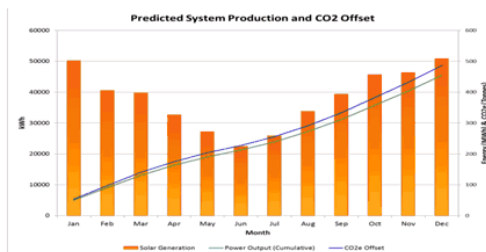
SHOALHAVEN INDOOR SPORTS STADIUM
59.74KW

Based on a detailed assessment of current site conditions, a system has been designed with a total installed capacity of 59.74kWp.

In order to create best financial returns for the solar PV system, an experienced engineering team has designed the best value system to maximise on-site consumption from the solar PV system. It is estimated that this system will generate approximately 89,909 kWh p.a.

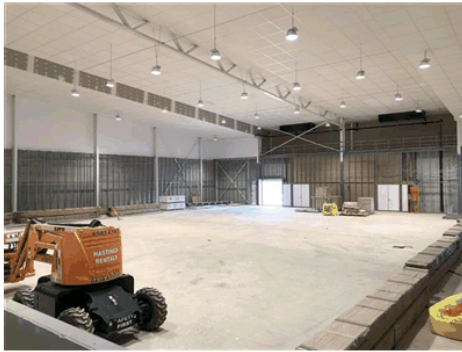


Proposed Solar Field



Predicted System Production & CO2 Offset

SITE	SHOALHAVEN INDOOR SPORTS STADIUM 59.74KW
COST OF SYSTEM (EX GST) *	\$57,424.36
ESTIMATED SOLAR PRODUCTION (KWH P.A.)	89,909 kWh
TOTAL SAVINGS (YEAR 1)	\$17,981.80
ESTIMATED SIMPLE PAYBACK TIME	32
ESTIMATED RETURN ON INVESTMENT	31%



LED Court Lighting

Benefits:

Reduce power consumption due natural lighting and ventilation and insular building properties

Supplementation of potable water consumption due to rainwater harvesting and reuse

Use of sustainable building products where compatible

Optimised energy efficiency delivered through instantaneous natural gas hot water heating and LED lighting systems

Project Team:

Project Delivery & Contracts Section
Zauner Constructions

Progress:

Date	Correspondence / Update



Project Title:
Sustainable Fleet Initiatives

ENERGY MATTERS

Summary:

Over 8 years we have reduced the vehicle choice from 28 to 11 removing all 6 and 8 cylinder cars, now offering more fuel efficient 4 cylinder cars. Less models means less parts to stock and streamline servicing.

Over the last 5 years we have reduced petrol vehicles from 9 to 5 (this includes 2 hybrid). The move towards other fuel source provides greater fuel economy and longer servicing intervals. This was a Federal Government initiative.

We offer two Hybrid vehicles with the prospect of trialing some electric vehicles. Reducing running costs while being environmentally friendly.

Residuals are up from 45% 5 years ago to 56% over all vehicles (not plant). We contribute this to the vehicle choice being offered taking into consideration what the market is demanding and extended warranty offered on certain manufacturers.

Better residuals and reducing the list has resulted in reduced whole of life cost across the fleet.



Toyota Prius C Hybrid



Toyota Camry Hybrid

Benefits:

Better fuel economy, increased residuals, reduced servicing and environmentally friendly.

Project Team:

Mark Andriske
Markus Tarrant

Progress:

Fleet is always looking at the market and trailing new models. Fleet have just tested the new Hybrid form Mitsubishi. Last month we tested a smaller SUV from Mitsubishi, which we will compare results against the Nissan Xtrail currently on the Leaseback Vehicle List.

We have made a commitment to purchase 3 full electric vehicles on a trial, with a view to add EV's to the Leaseback Vehicle List. Confirmation from the supplier has just been received, and the EV trial should start before end of finance year.

Total fuel usage is similar across the last 5years, however total kilometres travel is up. Showing an increase and fuel economy.

Project Title:
Solar Panel Installation - Cremators

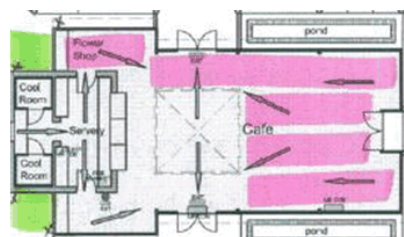
ENERGY MATTERS

Summary:

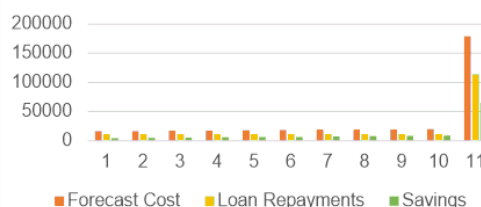
Planning for future installation of solar panels is underway. Existing plans need updating due to the additional construction of the cremator building. To better understand possible costs an initial quote was sought for installation of 30.00 kW solar system for buildings in 2014 which came in at \$89,568. Electricity costs are approximately \$16,000 per annum. There are currently no capital funds available for solar installation but with increasing interest in the sector and possible loan programs for local government in the future this may be possible.

Planting and maintenance of the grounds at Worrigee are based on use of endemic and/or drought tolerant species and the use of the existing native landscape for memorials where possible. During times of low rainfall, watering is restricted to maintaining the bare minimum of vegetation needed to minimize distress to the bereaved and to limit complaints from the public

Preliminary solar panel siting diagrams



Electricity Cost v Loan Funded Solar System



Benefits:

The installation of two new cremators has provided some energy benefits in terms of gas and electricity usage for cremations

Project Team:

Progress:

Milestone Date	Action	
31/12/2018	Seek updated quote and if effective include Capital Bid for loan funds to install solar system 2019/20	SBSU
26 March 2019	Still awaiting updated quotations	SBSU



SUSTAINABILITY INITIATIVES

Project Title:

Shoalhaven Swim, Sport & Fitness Eco Friendly Alternatives to Single Use Plastics

Summary:

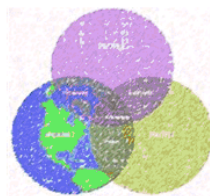
Shoalhaven Swim Sport Fitness Centres have moved to phase out the use of single use plastic by replacing straws and foodservice disposables etc with alternatives which are biodegradable and eco-friendly.

Given that the majority of food served throughout Council's Shoalhaven Swim Sport Fitness Centre Cafés is 'takeaway', a considerable effort has been made to replace all foodservice disposables with sustainable food packaging alternatives.



Benefits:

- BETA Board / BioPak products provide eco-friendly alternatives for disposables such as milkshake cups, serviettes, soup / salad bowls and many more
- Foodservice disposables served throughout our aquatic and leisure centres have been manufactured using renewable sustainably sourced materials which are:
 - non-toxic to the environment throughout their lifecycle
 - certified as being 'carbon neutral'
- Branded Keep Cups are:
 - recyclable at end of life
 - non-toxic
 - unbreakable
- Vegware products are made from renewable, lower carbon or recycled materials:
 - commercially compostable with food waste



Team Members:

- Jaimie Harding - Northern Leisure Manager (NAP)
- Owen Sims - Central Leisure Manager (BBLC)
- Drew Brown - Southern Leisure Manager (ULC)
- Kevin Norwood - Shoalhaven Swim, Sport & Fitness Manager

Progress:

Progressively since June 2017	Foodservice disposables have been served in BETA Board and / or BioPak products
September 2017	Introduction of branded Keep Cups to encourage customers to utilise re-useable cups for tea / coffee purchases
January 2019	All plastic straws have been replaced by plant-based straws from Vegware