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ITEM 1 - APPLICATIONS FOR LEAVE OF ABSENCE

REPORT IN BRIEF

Reason For Report	To allow tendering of apologies for councillors not present.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	1.2.2.1a - Facilitate Council and standing committee meeting processes.
Annexures	Nil
File Number	\\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COUNCIL - COUNCILLORS LEAVE OF ABSENCE - 1566673

RECOMMENDATION

THAT any apologies tendered be accepted and the necessary leave of absence be granted.

GENERAL MANAGER'S REPORT

A call for apologies is to be made.

ITEM 2 - DECLARATIONS OF INTEREST

REPORT IN BRIEF

Reason For Report	To allow an opportunity for councillors to declare an interest in any items to be determined at this meeting.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	1.2.2.1a - Facilitate Council and standing committee meeting processes.
Annexures	Nil
File Number	\\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COUNCIL - COUNCILLORS AND STAFF DECLARATION OF INTEREST - 2023 - 1566674

RECOMMENDATION

THAT the Declarations of Interest be noted.

GENERAL MANAGER'S REPORT

A call for Declarations of Interest.

ITEM 3 - DECLARATIONS OF POLITICAL DONATION

REPORT IN BRIEF

Reason For Report	To allow for an opportunity for Councillors to declare any Political Donation received.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	1.2.2.1a - Facilitate Council and standing committee meeting processes.
Annexures	Nil
File Number	\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COUNCIL - COUNCILLORS DECLARATION OF POLITICAL DONATIONS - 1566675

RECOMMENDATION

THAT any political donations be noted.

GENERAL MANAGER'S REPORT

A call for declarations of any political donations.

ITEM 4 - UPDATE REPORT - ENVIRONMENTAL SERVICES

REPORT IN BRIEF

Reason For Report	For the information of the committee
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	3.2.1.1a - Provide domestic waste collection services and local recycling facilities.
Annexures	Nil
File Number	\OFFICIAL RECORDS LIBRARY\ENVIRONMENTAL MANAGEMENT\MEETINGS and COMMITTEES\ENERGY EFFICIENCY AND SUSTAINABILITY COMMITTEE - 1567048

RECOMMENDATION

THAT the information contained within the report be noted.

DEPUTY GENERAL MANAGER - CABONNE SERVICES REPORT

The Environmental Services Department report for the period May – July 2023 is presented as follows:

Biosecurity

Over the last two months the Biosecurity team has been focusing on controlling Blackberry and Chilean needle grass. Chilean Needle grass is an ever-growing

problem which stretches from Borenore all the way back to Manildra township. This has required some extensive on ground works with the weeds officers progressively moving from site to site, controlling this invasive grass.

With the new financial year comes another year complete for our Weeds Action Program. Over the previous two months the Biosecurity team has been continuing to inspect private properties, reaching 450 initial inspections. This has been a big effort as our target from State Government for the financial year was 320. This round of inspections has also included 24km of railway completed and 15km of waterways. Ophir area was targeted for this inspection round in search for the ever-elusive water weeds.

Council's three biodiversity officers attended the Local Land Services hosted, Swift Parrot Identification/Habitat workshop, held in Eugowra during June. This workshop was focused on the swift parrot and other native birds and how to create or nurture habitat for them. The Biosecurity team were invited to this event by LLS to speak about the Biosecurity Act, landholder's obligations under the act, and the rising pressure on the natural environment and agricultural industry from the spread of invasive plant species. The Biosecurity team will be focusing on a streamlined approach to property inspections, with a results-oriented model, to be further in-line with the Biosecurity Act requirements.

Domestic and general waste services

Council has signed a 5-year contract with NSW EPA to continue the operation of the Community Recycling Centre located at the Manildra landfill site. This partnership has provided a readily available facility to Cabonne residents for the recycling of prescribed household items such as paint, batteries and gas cylinders.

The Netwaste Education program for 2023/2024 has been adopted by the participant councils for implementation during the new financial year. This includes community programs and workshops, school program delivery, community information days, and domestic waste collection bin audits.

Flood recovery / environmental hazard clean-up campaign

The NSW EPA have provided an update to council on its program to assist the clean-up and recovery, following the November 2022 floods.

The EPA's focus has been cleaning up large or hazardous man-made flood debris in areas heavily affected by the floods. In the Cabonne local government area this includes Cudal, Molong and Eugowra. The EPA has contracted specialist contractors AVCON Projects Australasia (AVCON) to clean-up flood debris. The debris is identified through aerial surveillance, on-ground and on-water mapping, reports from the community, and reports from government agencies, including councils. AVCON is using resources, including excavators, slings, chainsaws, boats, land vehicles and hand picking to clean-up debris.

Since February 2023, over 95 kilometres of creeks and waterways have been mapped to identify debris and more than 1400 cubic metres of debris have been removed from the Cabonne LGA. I have attached photos of some major clean-ups.

A summary of the clean-up achievements across the Cabonne LGA includes:

- *Completing the clean-up of Cudal in February 2023. A large amount of debris was removed from around Boree Creek. This work was a high priority as the creek is platypus habitat.*
- *Clean-up in Molong is also nearly complete. Large amounts of flood debris were removed from Molong Creek under the closest rail bridge to town and the Fairbridge Farm Memorial. The final clean-up is the removal of sediment and flood debris under rail bridge 3. The EPA is currently working through approvals and logistics for this work.*
- *Clean-up in Eugowra is ongoing. Flood debris removed to date includes 5 shipping containers, numerous chemical and pesticide drums, tyres, gas bottles, water tanks, pallets, building timber, furniture, garden sheds, wheelie bins, caravan panels, foam, fencing and more. Current work is focusing on mapping and removal of hazardous flood debris in Mandagery Creek.*

EPA acknowledged the efforts of Cabonne Council, and members of the Eugowra Promotion and Progress Association for their assistance, which allowed EPA contractors to quickly deploy and commence the clean-up works.

The EPA is keen to continue to work with Cabonne Council to complete the clean-up. Members of the community and council staff may report remaining flood debris on public or private land or in waterways by either calling the Environment Line on 131 555 or by emailing flood.programs@epa.nsw.gov.au.



Flood debris items in Eugowra. The green circles are debris that has been cleaned up, yellow is debris that has not been cleaned up, red is debris that has not been cleaned up and is classified as a high priority.



Flood debris in Cudal.



Rail Bridge 1 in Molong following debris removal



Flood debris in Eugowra.



Flood debris removal in Eugowra.

ITEM 5 - INNOVATION & TECHNOLOGY UPDATE

REPORT IN BRIEF

Reason For Report	Innovation & Technology update
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	1.3.2.1a - Implement the adopted and prioritised actions from Council's Renewable Energy Action Plan (REAP).
Annexures	1. CSC solar powerplant business modelling update - July 2023 ↓
File Number	\\OFFICIAL RECORDS LIBRARY\ENVIRONMENTAL MANAGEMENT\PROGRAMS\CATCHMENT MANAGEMENT - 1568425

RECOMMENDATION

THAT the information be noted.

DEPARTMENT LEADER - INNOVATION & TECHNOLOGY'S REPORT

MID-SCALE SOLAR PLANT UPDATE

Consultants Constructive Energy are working with council's energy retailer to develop a report to accompany council's application for funding from T-Corp. Ashley Bland from Constructive Energy will be attending the committee meeting and has provided the attached report.

MOLONG CREEK ENVIRONMENTAL MONITORING SYSTEM

As a result of council's community consultation following the November 2022 flooding, council has deployed an initial environmental monitoring system on the Molong Creek. The system, which may contribute to flood intelligence system, is not an early warning or detection system.

The system utilises LoRaWAN (**Long Range Wide Area Network**) a low power radio technology solution that involved the installation of a base station on the Molong Water Treatment Plant, and a sensor mounted over the Molong Creek on the Marsden Street bridge. Data is fed from the sensor, back to the base station and through a series of back end services to arrive at a visualisation platform that allows us to chart the data on Council's website (see: <https://www.cabonne.nsw.gov.au/Molong-Creek-Environmental-Monitoring>), the sensor collects the water level, ambient temperature, humidity and air pressure.

LoRaWAN is an open network allowing anyone within range to connect sensors to the council's gateway. Because of its open nature, council's sensors can also communicate via any 3rd party LoRaWAN gateways that happen to be within range. The amount of data delivered in each communication is quite small, however this means the power required to transmit is quite low, allowing sensors to operate for years on batteries such as standard AAs. There is a very broad range of sensors available, including but not limited to electronic water meters, bin sensors, parking sensors, noise sensors, moisture sensors etc.

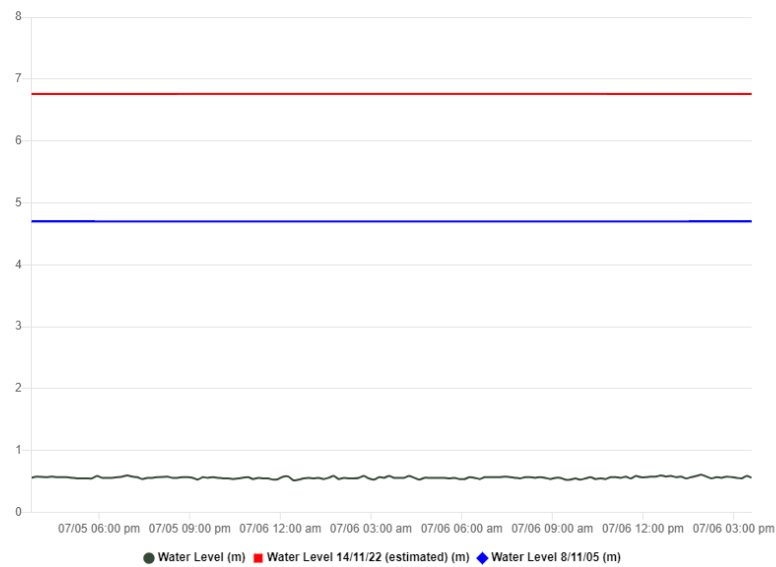
Home / Molong Creek Environmental Monitoring

Molong Creek Environmental Monitoring

Data is collected on a best efforts basis and may not be complete, Council makes no guarantees data will be available for all time periods. Data is available for environmental monitoring of creek conditions at the Marsden Street Bridge, it is not for use as an early warning or flood alert system.

You can bookmark or add this page to your device's homepage for easy access.

Water Level (m)



Screenshot of website page



LoRaWAN Gateway mounted on the Molong Water Treatment Plant (top device)



Sensor mounted on bridge



CONSTRUCTIVE ENERGY

Cabonne Shire Council

Eugowra Renewable Energy Power Plant

Energy and financial modelling INTERIM report

Completed by Constructive Energy Pty Ltd

July 2023

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Disclaimer

This report documents the results of preliminary observations and analysis of material provided to Constructive Energy Pty Ltd. In preparing the report, we have relied upon information provided by Cabonne Shire Council, Retailers and E21 Energy Management through referral to form our conclusions. Whilst we have reviewed this information to assess its reasonableness and internal consistency, we are not able to consider specific and/or abnormal circumstances that may impact your energy use.

The findings, conclusions and recommendations and all written material contained in the report represents our best professional judgement based on estimated and generic data and visual inspection where appropriate. Recommendations have assumed average conditions and historical usage.

1. Background

Cabonne Shire Council (CSC) is now in the position to construct, own and operate a dispatchable powerplant at the Eugowra wastewater treatment site. Network approvals are sufficiently advanced to provide confidence that electricity can be safely exported into the Essential Energy network. Development Approval has been granted. The remaining decision factor concerns the acceptability of the financial model to Council.

This report outlines factors affecting the business plan, provides project performance updates, and makes recommendations for a suitable energy sale value to negotiate around. It is important to note that this report reflects outcomes of on-going dialogue with Iberdrola who are currently the retailer provider of energy to CSC.

Following the successful application for funding to contribute to battery installation, battery modelling is included in this report.

2. System design

Configuration of the solar array and battery powerplant has remained consistent. The proposed array is mounted in east-west configuration on a peg structure as indicated in the image below. The image also shows the central Inverter/Transformer in the mid distance. It's approximately the size of a 5m shipping container.



Photo 1. Example solar array powerplant

The system elements are;

- 2,140 kW solar PV fixed ground mount
 - 2 MWh Lithium battery
- Controls, monitoring and integration
- HV and LV electrical works
- Equipment supply and installation.

Financial considerations

The following budget table is a condensed version of the working budget which provides detailed itemisation under each heading.

Budget

		Subtotal	\$	1,450,284	\$ 0.7037
BESS		Subtotal	\$	1,349,647	\$ 0.6549
Project	Project owner	Budget Ex			
		Subtotal	\$	1,341,950	\$ 0.6512
DC INSTALLATION		Subtotal	\$	622,400	\$ 0.3020
Project Management		Subtotal	\$	179,790	\$ 0.0872
		SUB TOTAL (GST exclusive)	\$	4,944,071	
Retail contract establishment, licences etc	CE		\$	75,000	
DA Contributions (Stage 3 - prior to OC) - 1% CapEx	CE		\$	49,441	
Contingency costs: miscellaneous works / inclement weather / etc .. 5% CapEx	EPC		\$	247,204	
		Total Ex	\$	5,315,715	
		Cost per Watt (PV Only)	\$	1.74	
		Cost per Watt (Firmed)	\$	2.40	

Financial Assumptions

Net Present Value calculation have been derived based on the following assumptions.

CPI = 3.0%

Discount Rate = 5.0%

Interest Rate = 6.0%

O&M annual cost = 1.0% of Capex

Australian Dollar = \$0.68 USD

Panel pricing = \$0.22/W – based on current pricing via suppliers

Storage cost = \$700/kWh – upper end of range (\$500 – \$700) for installation + configuration and controls.

Note: The battery cost is higher than previously modelled because since the original battery modelling was conducted, Sungrow have modified their approach to containerised storage solutions. This has had the impact of making the Sungrow battery solution unsuitable. At the CSC scale it may not be possible to implement storage at utility scale pricing, so we have researched alternative providers for the purpose of establishing a working budget. On the positive side, there are now Australian manufactures able to offer storage solutions in the price range modelled.

Project performance

Financial performance is heavily dependent on the model applied. We have previously canvassed various market approaches including direct sale to the market at spot prices, a Power Purchase Agreement with a known customer for a set price and duration and a retail Power Pass Through arrangement where energy is purchased directly by Council from its own powerplant.

Because of the existing energy CNSWJO supply contract with Iberdrola and their willingness to investigate incorporating the CSC array, the model applied in this report is slightly different. Iberdrola are also currently unable to supply small sites due to licence limitations in NSW meaning that direct supply of energy to all CSC sites from the array is not currently possible.

Our role has been to independently arrive at a value for sale of energy that would be fair for all parties. We have also sought to identify an operating model and narrative which CSC can legitimately convey to the community that makes sense.

Discussions with Iberdrola have been based around the following principles.

- Financially responsible – provides energy price value/certainty + revenue for a community fund.
- Carbon smart – creates certificates to offset unavoidable emissions.
- A good story – supports a narrative that the community relates to.

At the time of writing CSC is still awaiting a formal offer from Iberdrola however in principle we know that under their proposed model the powerplant is operated as an offset to council consumption – i.e., same volume, enabling CSC to eliminate carbon emissions from electrical energy consumption. Energy is sold into the JO 'pool' with some of it bought back by CSC and the rest assisting other local Councils to reach 100% renewable supply. In this way, the powerplant is 'part of the mix' that supplies all the councils and Cabonne Council is both looking after its own interests and being a 'good neighbour'.

Modelling is based on the assumption that the generation asset is primarily directed at meeting a daytime load but with a 'dispatchable' component to meet evening/peak loads. The battery can also be utilised to avoid negative price events and optimise price spikes in the National Energy Market. Iberdrola would be given control of the battery and operate it in response to market conditions and in a way that underwrites the existing supply agreements.

Thus, the task is to identify a rate at which Council makes a suitable return on investment and at which Iberdrola (or any other retailer) can facilitate retail supply at competitive rates.

Market Shifts

Of note is the fact that energy prices have moved considerably over the past year. Inflationary pressures, regulator input and factors associated with how the market treats risks in the transition from coal to renewable powerplants have all put upward pressure on energy costs.

Most clients we know of are currently facing retail charges equating to over \$240/MWh. The wholesale price average is up on previous years and the ASX forward pricing for 'black' energy in 2024 is ~\$135/MWh. It is \$122/MWh in 2025 and \$130 in 2026 indicating an expectation that prices will remain high for the near to medium term.

Carbon values have also risen since our original modelling for CSC and after a peak of over \$50/MWh are now sitting around \$42/MWh.

The combined spot value of green energy in the wholesale market equates to the black price + LCG value. Applying the above values for 2024 equates to \$135 + ~\$42 = \$179/MWh. In a longer-term agreement however, vendors and purchasers would seek to agree on a value that provides potential upside and mitigates risk for both parties.

In our view, solely considering what could be considered a fair price in the prevailing market conditions, \$150/MWh is a good working value for green energy in the context of the Cabonne – Iberdrola deal.

3. Modelling Results

Without a firm offer from Iberdrola (or another retailer) and by nature of the fact that they would control the running of the powerplant, it is not possible to accurately model project performance. However, based on the working figure of a flat \$150/MWh, it is possible to articulate scenarios around a base case.

In each case a line has been created for a "CSC Resilience Fund", representing a funding stream that can be applied at Council's discretion above and beyond loan repayments and operational costs.

1. **BASE CASE - \$1.5m R4R + 3.5m borrowings (CapEx \$5m)**

12 yr NPV	\$615,866		As the table below indicates, despite resulting in a positive NPV, this structuring leads to a deficit in the CSC fund while the array debt is being repaid. After the 10-year mark however the CSC fund would receive revenues in the order of \$500,000 per annum. In order to address the deficit a loan period of 20 years was applied.
Loan period	10 years		
Solar to loads	\$150	/MWh	
Battery to loads	\$150	/MWh	
Excess solar to CNSWJO	\$150	/MWh	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Income												
Solar to loads	\$85,042	\$87,577	\$90,186	\$92,870	\$95,633	\$98,475	\$101,398	\$104,406	\$107,502	\$110,689	\$113,971	\$117,350
Battery to loads	\$57,119	\$58,632	\$60,348	\$62,129	\$63,964	\$65,858	\$67,809	\$69,819	\$71,883	\$74,004	\$76,176	\$78,403
Solar Export	\$339,694	\$348,164	\$356,812	\$365,468	\$374,140	\$382,716	\$391,200	\$399,707	\$408,269	\$416,941	\$425,825	\$434,965
Project Income	\$481,855	\$494,373	\$507,346	\$520,467	\$533,737	\$547,048	\$560,407	\$573,931	\$587,654	\$601,634	\$615,973	\$630,718
Plus Other Income												
LGCs Price MWh	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Income	\$481,855	\$494,373	\$507,346	\$520,467	\$533,737	\$547,048	\$560,407	\$573,931	\$587,654	\$601,634	\$615,973	\$630,718
Less Expenses												
O&M	\$50,271	\$51,779	\$53,332	\$54,932	\$56,580	\$58,278	\$60,026	\$61,827	\$63,682	\$65,592	\$67,560	\$69,587
Lease	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Insurance	\$30,000	\$30,900	\$31,827	\$32,782	\$33,765	\$34,778	\$35,822	\$36,896	\$38,003	\$39,143	\$40,317	\$41,527
Project expenses	\$85,271	\$87,679	\$90,159	\$92,714	\$95,345	\$98,056	\$100,848	\$103,723	\$106,685	\$109,735	\$112,877	\$116,114
Total Expenses	\$85,271	\$87,679	\$90,159	\$92,714	\$95,345	\$98,056	\$100,848	\$103,723	\$106,685	\$109,735	\$112,877	\$116,114
Gross Profit	\$396,584	\$406,694	\$417,186	\$427,753	\$438,391	\$448,993	\$459,559	\$470,208	\$480,969	\$491,899	\$503,095	\$514,605
Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan repayments	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$0	\$0
Total	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$469,894	\$0	\$0
CSC Resilience fund	-\$73,310	-\$63,200	-\$52,708	-\$42,141	-\$31,503	-\$20,901	-\$10,335	\$315	\$11,076	\$22,005	\$503,095	\$514,605

2. BASE CASE WITH 20Y TERM - \$1.5m R4R + 3.5m borrowings (CapEx \$5m)

12 yr NPV	\$615,866	
Loan period	20 years	
Solar to loads	\$150	/MWh
Battery to loads	\$150	/MWh
Excess solar to CNSWJO	\$150	/MWh

With repayments reduced over the 20-year term, the project becomes cash positive from day 1. Council may choose to manage the fund at their discretion and refinance at some point in the mid-term of the project. Battery replacement/refurbishment may be a good trigger for this in the 10–15-year period.

An alternative way to reduce repayments would be to fund a proportion of the Capex from internal resources.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Income												
Solar to loads	\$85,042	\$87,577	\$90,186	\$92,870	\$95,633	\$98,475	\$101,398	\$104,406	\$107,502	\$110,689	\$113,971	\$117,350
Battery to loads	\$57,119	\$58,632	\$60,348	\$62,129	\$63,964	\$65,858	\$67,809	\$69,819	\$71,883	\$74,004	\$76,176	\$78,403
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Plus Other Income												
LGCs Price MWh	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Income	\$481,855	\$494,373	\$507,346	\$520,467	\$533,737	\$547,048	\$560,407	\$573,931	\$587,654	\$601,634	\$615,973	\$630,718
Less Expenses												
O&M	\$50,271	\$51,779	\$53,332	\$54,932	\$56,580	\$58,278	\$60,026	\$61,827	\$63,682	\$65,592	\$67,560	\$69,587
Lease	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
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Gross Profit	\$396,584	\$406,694	\$417,186	\$427,753	\$438,391	\$448,993	\$459,559	\$470,208	\$480,969	\$491,899	\$503,095	\$514,605
Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan repayments	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229
Total	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229	\$303,229
CSC Resilience fund	\$93,355	\$103,465	\$113,957	\$124,524	\$135,162	\$145,763	\$156,330	\$166,979	\$177,740	\$188,670	\$199,866	\$211,376

3. BASE CASE WITH \$2m CSC CONTRIBUTION - \$1.5m R4R + 1.5m borrowings (CapEx \$5m)

12 yr NPV	\$2,520,628		Naturally, this approach improves the SCS Resilience fund however Council may consider a proportion of this fund as the return on funds invested. For example, if we imagine ~\$100,000 of the CSC funds in year 1 are attributed to the \$2 million investment, this equates to a 5% return. Applying both a longer borrowing term and internal contribution naturally improves the result.
Loan period	10 years		
Solar to loads	\$150	/MWh	
Battery to loads	\$150	/MWh	
Excess solar to CNSWJO	\$150	/MWh	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Income												
Solar to loads	\$85,042	\$87,577	\$90,186	\$92,870	\$95,633	\$98,475	\$101,398	\$104,406	\$107,502	\$110,689	\$113,971	\$117,350
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Plus Other Income												
Large Generation Certificates	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Income	\$481,855	\$494,373	\$507,346	\$520,467	\$533,737	\$547,048	\$560,407	\$573,931	\$587,654	\$601,634	\$615,973	\$630,718
Less Expenses												
O&M	\$50,271	\$51,779	\$53,332	\$54,932	\$56,580	\$58,278	\$60,026	\$61,827	\$63,682	\$65,592	\$67,560	\$69,587
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Insurance	\$30,000	\$30,900	\$31,827	\$32,782	\$33,765	\$34,778	\$35,822	\$36,896	\$38,003	\$39,143	\$40,317	\$41,527
Project expenses	\$85,271	\$87,679	\$90,159	\$92,714	\$95,345	\$98,056	\$100,848	\$103,723	\$106,685	\$109,735	\$112,877	\$116,114
Total Expenses	\$85,271	\$87,679	\$90,159	\$92,714	\$95,345	\$98,056	\$100,848	\$103,723	\$106,685	\$109,735	\$112,877	\$116,114
Gross Profit	\$396,584	\$406,694	\$417,186	\$427,753	\$438,391	\$448,993	\$459,559	\$470,208	\$480,969	\$491,899	\$503,095	\$514,605
Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan repayments	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$0	\$0
Total	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$203,445	\$0	\$0
CSC Resilience fund	\$193,139	\$203,249	\$213,742	\$224,309	\$234,947	\$245,548	\$256,114	\$266,764	\$277,525	\$288,454	\$503,095	\$514,605

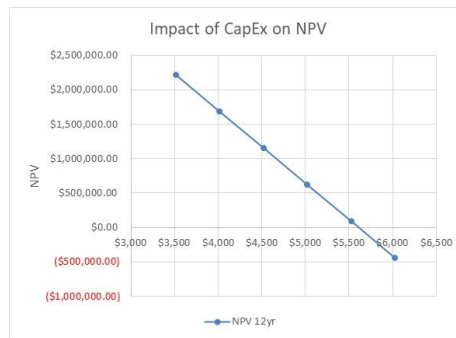
4. **20 YEAR TERM + \$2m CSC CONTRIBUTION - \$1.5m R4R + 1.5m borrowings (CapEx \$5m)**

12 yr NPV	\$2,520,628	
Loan period	20 years	
Solar to loads	\$150	/MWh
Battery to loads	\$150	/MWh
Excess solar to CNSWJO	\$150	/MWh

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Income												
Solar to loads	\$85,042	\$87,577	\$90,186	\$92,870	\$95,633	\$98,475	\$101,398	\$104,406	\$107,502	\$110,689	\$113,971	\$117,350
Battery to loads	\$57,119	\$58,632	\$60,348	\$62,129	\$63,964	\$65,858	\$67,809	\$69,819	\$71,883	\$74,004	\$76,176	\$78,403
Solar Export	\$339,694	\$348,164	\$356,812	\$365,468	\$374,140	\$382,716	\$391,200	\$399,707	\$408,269	\$416,941	\$425,825	\$434,965
Project Income	\$481,855	\$494,373	\$507,346	\$520,467	\$533,737	\$547,048	\$560,407	\$573,931	\$587,654	\$601,634	\$615,973	\$630,718
Plus Other Income												
LGCs Price MWh	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Income	\$481,855	\$494,373	\$507,346	\$520,467	\$533,737	\$547,048	\$560,407	\$573,931	\$587,654	\$601,634	\$615,973	\$630,718
Less Expenses												
O&M	\$50,271	\$51,779	\$53,332	\$54,932	\$56,580	\$58,278	\$60,026	\$61,827	\$63,682	\$65,592	\$67,560	\$69,587
Lease	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Insurance	\$30,000	\$30,900	\$31,827	\$32,782	\$33,765	\$34,778	\$35,822	\$36,896	\$38,003	\$39,143	\$40,317	\$41,527
Project expenses	\$85,271	\$87,679	\$90,159	\$92,714	\$95,345	\$98,056	\$100,848	\$103,723	\$106,685	\$109,735	\$112,877	\$116,114
Total Expenses	\$85,271	\$87,679	\$90,159	\$92,714	\$95,345	\$98,056	\$100,848	\$103,723	\$106,685	\$109,735	\$112,877	\$116,114
Gross Profit	\$396,584	\$406,694	\$417,186	\$427,753	\$438,391	\$448,993	\$459,559	\$470,208	\$480,969	\$491,899	\$503,095	\$514,605
Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan repayments	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286
Total	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286	\$131,286
CSC Resilience fund	\$265,298	\$275,408	\$285,901	\$296,468	\$307,105	\$317,707	\$328,273	\$338,923	\$349,684	\$360,613	\$371,810	\$383,319

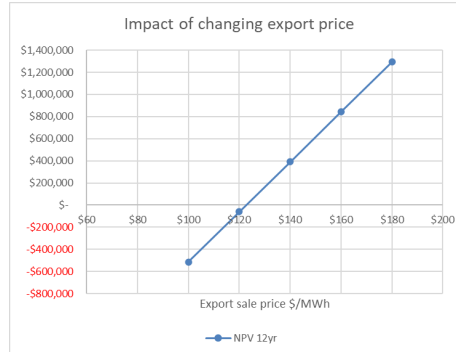
This report does not seek to provide advice on how council should structure the project, rather to identify general approaches and their likely impact.

In previous reports, CE has sought to indicate sensitivity of the model to changes in CapEx and Export price, the two headline parameters effecting project performance.



Graph 1. Impact of CapEx on NPV sensitivity (Base case)

The inference from this analysis is that the Base case is relatively close to breakeven NPV on a 12-year term and that reduction in Capex makes a significant positive difference to NPV.



Graph 2. Impact of Export value on NPV sensitivity

This chart indicates that an export value of ~\$120/MWh is close to break-even NPV on a 12-year term for the base case. Values over \$120 quickly increase the NPV.

5. Summary

It is not practicable to model project performance at this stage without a firm offer and operating model for the powerplant. However, it is possible to identify a preferred value for energy sales and some basic funding structures at which the project is viable.

\$150/MWh can be used as a guide to negotiate a flat rate for green energy in the context of the potential Iberdrola deal.

A 10-year contract term is reasonable for this value and Council may choose to structure the project in various ways to achieve the desired cash-flow. At the 12-year period Council has the potential to refinance the project in a strong position, likely to coincide with renewal or refurbishment of the battery if required.

Council will need to consider the relative merits of selling or retaining some or all of the associated carbon credits as these have a material impact on project revenues.

Explanatory notes:

Units of measure

<p>1 MWh = 1,000 kWh</p> <p>Thus \$1/MWh = \$0.001/kWh or, for example, \$80/MWh = \$0.08/kWh.</p> <p>For convenience, consumer charges are usually presented in c/kWh so in the above example \$80/MWh translates to 8c/kWh.</p>

LGCs.

The Renewable Energy Target started in 2001 and was aimed at ensuring 20% of Australia's energy was sourced from renewable sources by 2020. It has been funded through a small tariff collected from all energy bills and allocated to projects that create renewable energy. Projects below 100kW qualified for Small Generation Certificates (SGCs) delivered as a rebate on solar panels. Projects over 100kW qualified for Large scale Generation Certificates (LGCs). The scheme ends in 2030 with the value of LGCs expected to fall from current levels around \$30/MWh to zero around 2028. At the time of writing there is no certainty around what, if any, mechanism will replace it or otherwise account for the carbon reduction value in producing renewable energy.

Glossary Of Terms

Abbreviation	Term	Explanation - if required
AC	Alternating Current	The rapid cyclic way energy is supplied to grid connected customers.
CSC	Cabonne Shire Council	
c/kWh	Cents per kilowatt hour	The way energy charges are represented on most energy bills.
CAPEX	Capital Expense	The sum of initial project expenses without on-going costs or charges
C&I	Commercial and Industrial	An indicative label to describe a range of enterprises from, for example, hairdressing salons to steel fabrication firms
CE	Constructive Energy	
CISA	Connection Investigation Services Agreement	Formal application and right to connect via Essential Energy – the network provider
CPI	Consumer Price Index	

DC	Direct Current	The continuous way electricity is supplied from solar panels and battery storage
DLF	Distribution Loss Factor	A market instrument to reflect the difference in energy supplied to the network and what customers actually receive
DN	Distribution Network	The 'poles and wires' connecting an electrical sub-station with individual residential and commercial loads.
DP	Deposited Plan	
EE	Essential Energy	The organisation charged with operating and maintaining the Distribution Network
FY	Financial Year	
GST	Goods and Services Tax	
GW	Gigawatt	1,000,000,000 watts - Standard International units of energy.
GWh	Gigawatt hour	Energy capacity x time, representing a volume of energy. This unit is used when the equivalent value in MWh becomes large
kW	Kilowatt	1000 watts - Standard International units of energy.
kWh	Kilowatt hour	Energy capacity x time, representing a volume of energy. This is the standard unit for charging energy consumers.
kV	kilovolt	1000 volt. Used to refer to the capacity of powerlines, usually 11, 22, 33 or 66 in the Distribution Network
LGA	Local Government Area	
LGC	Large Generation Certificate	Government subsidy/renumeration based on the volume of renewable energy generated
MLF	Marginal Loss Factor	A decimal applied to energy production by the Australian Energy Market Operator to account for potential oversupply into the market
MW	Megawatt	1,000,000 watts - Standard International units of energy.
MWh	Megawatt hour	Energy capacity x time, representing a volume of energy. This is the standard unit for trades within the National Energy Market and thus, the units sold or purchased by Generators and Retailers
MWp	Megawatt peak	Used to specify the nameplate peak capacity of a solar system

NEM	National Energy Market	The legislated and governed market into which energy is sold by generators and purchased for on selling by retailers
NPV	Net Present Value	The sum of an investments expected cash inflows from future years valued in today's money, minus the initial investment outlay
OPEX	Operation Expense	Day-to-day costs associated with running and maintaining a project.
PPA	Power Purchase Agreement	A type of contract where an 'off taker' agrees to purchase a specified quantity of energy from a generator at a certain price
RBA	Reserve Bank of Australia	
ROA	Revolving Offtake Agreement	A specific approach offered by a retailer to value energy exported from a renewable energy generator into the National Energy Market

