



Central Tilba/Tilba Tilba Micro Grid Feasibility Discussion Forum #2



Record of Discussion

*These design briefs developed within communities will contribute to SuRF project
Milestone 5.4 High level concept and design for the eight communities*

CENTRAL TILBA SMALL HALL
17 MAY 2023

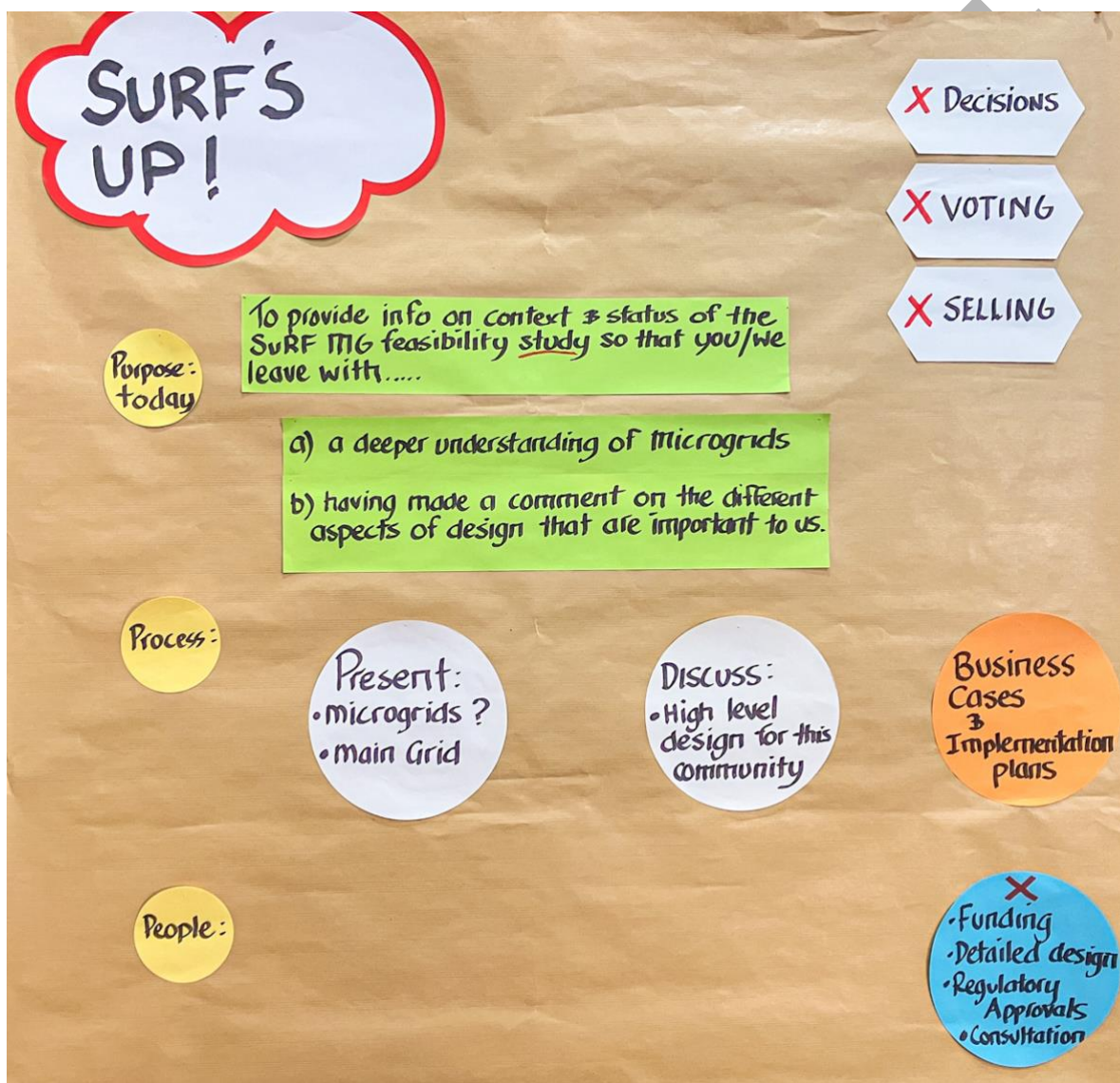
*Presented by & Bjorn Sturmborg (ANU) and Matt O'Neill (Essential Energy).
Moderated by Phil Shorten (SHASA)*

Introduction & Context

The first step of the forum was to introduce the purpose and process of the forum and recognise the group participating in the discussion.

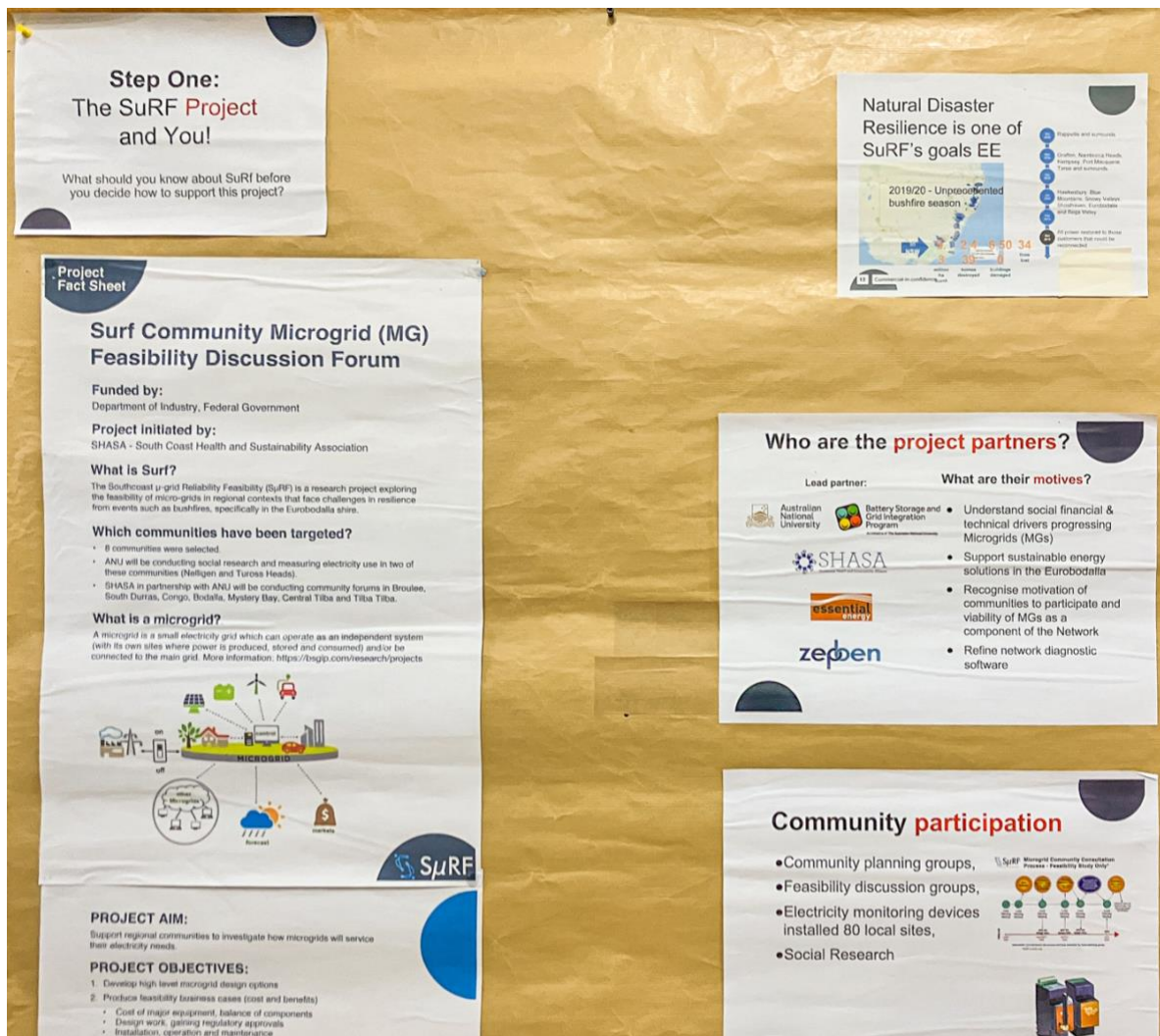
The purpose being to provide information on the context and status of the SuRF Microgrid feasibility study so that those participating leave with a deeper understanding of Microgrids and have a chance to comment on the different aspects of design that are important to them.

The context was provided by way of a series of project fact sheets about the SuRF project.



Moderator Notes...

Introduction and Context



Moderator Notes...

Introduction and Context

Step One: The SuRF Project and You!

What should you know about SuRF before you decide how to support this project?

What happens after SuRF finishes?

- SuRF ends 30 April 2024
- Then what.....?
- Dept industry hardware fund
- ARENA hardware fund
- Funding available now: <https://arena.gov.au/funding/regional-australia-microgrid-pilots-ramp/>
- Community planning groups may undertake further consultation of MG designs to identify preferred option
- Communities have a feasibility study to offer to funders to progress
- Other communities have detailed intelligence & tools to inform how they may go about their own feasibility investigations
- Regulators will consider changes to energy regulations informed by this feasibility study
- Essential Energy will consider communities aspirations for ongoing improvements to the network

Regional Australia Microgrid Pilots Program

What happens after SuRF finishes?

Should the community be happy with their microgrid option, they can take the business case study and feasibility study and apply for the next round of Government funding and start community consultation for implementation.

Regional Australia Microgrid Pilots Program

In October 2023, the Australian Government announced the \$20 million Regional Australia Microgrid Pilots Program (RAMP) to support pilot demonstration of microgrid in regional and remote areas.

You can find more information here: <https://arena.gov.au/funding/regional-australia-microgrid-pilots-ramp/>

Why SuRF study is important to Essential Energy

- To understand the technical, social and economic viability of microgrids
- To recognize where, why, how and type of microgrids fit across diverse communities and our network
- To tap data driven knowledge on how microgrids could increase resilience and reduce reliance on long sections of network
- Opportunity to influence governing bodies (Such as the Australian Energy Regulator and Australian Energy Market Operator)

12 | Commercial-in-confidence

Moderator Notes...

FEASIBILITY

STEP 1

Design Objectives from Round 1 Community Discussion Group

Central Tilba/Tilba Tilba

SuRF

What comments can we make on the various aspects of Microgrid design that are important to us?

brief
High level Design offered so far SuRF
(Spring 2022 Forum outcomes)

Key Resilience issues	Timing in islanded mode	Generation/Storage Technologies	Retail/Sharing requirements	Ownership	Unique feature
Water to drink /fire protection.	Restricted: 48hrs to 7 days	Renewables plus 200kw diesel genset and 20-50kw RTPV with	Share power locally (P2P)	Community/private	Loads include capacity to service village sprinkler system when in islanded mode
Village sprinkler system.	Extended: Sufficient hrs to reduce peak load prices from main grid	community owned 20kw RTPV (existing) solar garden and batteries plus hybrid -	Integration of private assets with community owned assets. E.g. larger battery and solar garden – challenge for NFP retailer	Little support for third party owned	
Comms.					

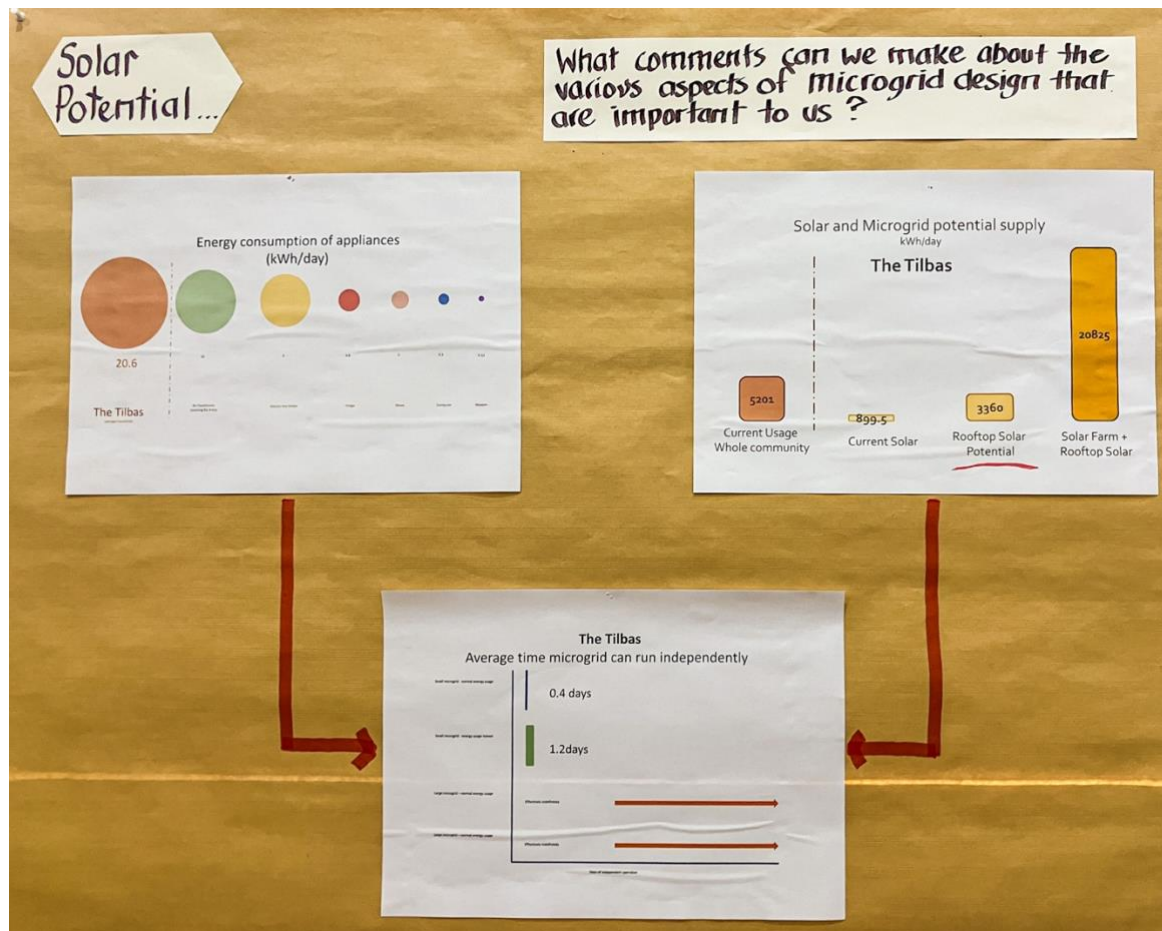
Moderator Notes...

FEASIBILITY

STEP 2

Analysis of solar potential within the community

Analysis showing the potential generation available from rooftop solar and the time the microgrid could operate in islanded mode.



Moderator Notes...

The analysis suggests that battery offered in the microgrid design by the SuRF team will provide almost half (0.4) a day of electricity in islanded (switched off from main) during a main grid outage.

If the community was to restrict their usage by 50% then the islanded time could be extended to 1.2 days

STEP 3

Small Microgrid: Design brief offered from Rd 1 community discussion group

The design brief was informed by the outcomes from the Round 1 consultations held during the Spring of 2022.

Design Brief
Small MG.

What comments can we make about the various aspects of microgrid design that are important to us?

Central Tilba/Tilba Tilba SMALL Type 2 MG Mudmap
(from Rd 1 discussions held Spring 2022)

The diagram illustrates a central 'CONTROL SYSTEM' connected to various components: 'Private Rooftop Solar', 'Village Sprinkler Systems (CT AND TT)', 'CHEESE FACTORY Commercial Factory Coolroom', 'MAIN GRID', 'Battery at Oval', 'Diesel Genset Tilba Cheese Factory', 'Residents Restricted to 1-2 circuits eg lights, pump', and 'EV Charger PO and carpark Emergency Vehicles Only'. It also notes 'Existing solar PV on Dromedary Hotel, General Store, Community Hall and Tilba Cheese Factory'.

Central Tilba/Tilba Tilba SMALL Type 2 MG Guidelines
(from Rd 1 discussions held Spring 2022)

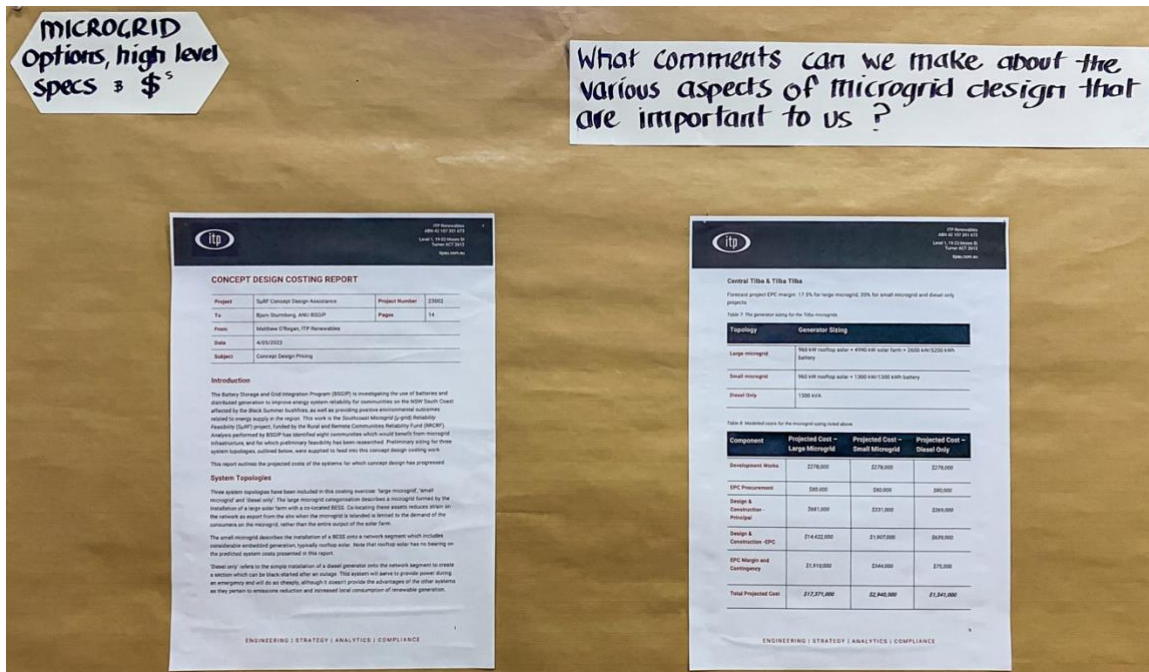
- Central Tilba village is most important in an emergency
- We should have access for a min 48hrs to 7 days so that we can pump (drinking) water, single/freezer charge phone/laptop → single light in 2/3 rooms
- Onsite loos – exclude commercials
- Possibility of fire fighting i.e. sprinkler/mist system for village and outlying to maintain unique heritage area
- Our microgrid should be efficient i.e. minimize losses
(Page 11, Discussion)
- Possibility that the Cheese factory cool room could be used by the Dromedary Hotel, General Store and other food retailers, thereby reducing the load for islandable operation
(Source: North Tilba Road Project Report Rd 1 Document)

Moderator Notes...

STEP 3

Small Microgrid: High Level Design Concept

Technologies with technical specifications and costings compiled by the SuRF team for the small Microgrid were made available for comment.



Moderator Notes...

STEP 4

Large Microgrid: Design Brief offered from Rd 1 community discussion group.

The design brief was informed by the outcomes from the Round 1 consultations held during the Spring of 2022.

Design Brief Large MG.

What comments can we make about the various aspects of Microgrid design that are important to us?

Central Tilba/Tilba Tilba LARGE Type 3 MG Mudmap
(from Rd 1 discussions held Spring 2022)

Private Rooftop Solar
Solar Farm
Diesel Genset
Tilba Dairy Factory
Battery at Oval
Land behind village on Batteries
Additional solar PV on Dromedary Hotel, General Store, Community Hall and Tilba Cheese Factory
MAIN GRID
CONTROL SYSTEM
Residents
Opt In Opt Out

Central Tilba/Tilba Tilba LARGE Type 3 MG Guidelines
(from Rd 1 discussions held Spring 2022)

- We should be able to share peer to peer to capitalize on peak generation and pricing
- At least 2 days minimum islanding is preferable as I can survive power free for 2-4 days without too much adversity. Regular outages are seldom longer than a day or two outside of emergencies/natural disasters. 2 days islanding minimum is a good general buffer
- [We would like] ... Essential Energy to pay for and maintain the grid with their (or whoever's) legal responsibility to provide 99.98% reliability at the lowest possible cost. Apart from emergencies, long term outages.

Central Tilba/Tilba Tilba LARGE Type 3 MG Guidelines
(from Rd 1 discussions held Spring 2022)

- Ultimately, finances (limited) allowing, [we] would like to be as self sufficient and offgrid as possible, but [we] think (?) a microgrid would be a more viable alternative than achieving self sufficiency.
- The MG could start small (Central Tilba Village) with the capacity to expand outwards
- Opportunity to opt in and opt out

(Page 13, Discussion)

Moderator Notes...

FEASIBLE

STEP 4

Large Microgrid: High Level Design Concept

Technologies with technical specifications and costings compiled by the SuRF team for the large Microgrid were made available for comment.

High level design - Large MG.

What comments can we make about the various aspects of microgrid design that are important to us?

LOCATION PLAN
Scale: 1:50,000
PRELIMINARY DESIGN

SITE PLAN
Scale: 1:10,000
PRELIMINARY DESIGN

GENERAL ARRANGEMENT PLAN
Scale: 1:1,000
PRELIMINARY DESIGN

Solar Farms.....

ELEVATION A
Scale: 1:100
PRELIMINARY DESIGN

ELEVATION B
Scale: 1:100
PRELIMINARY DESIGN

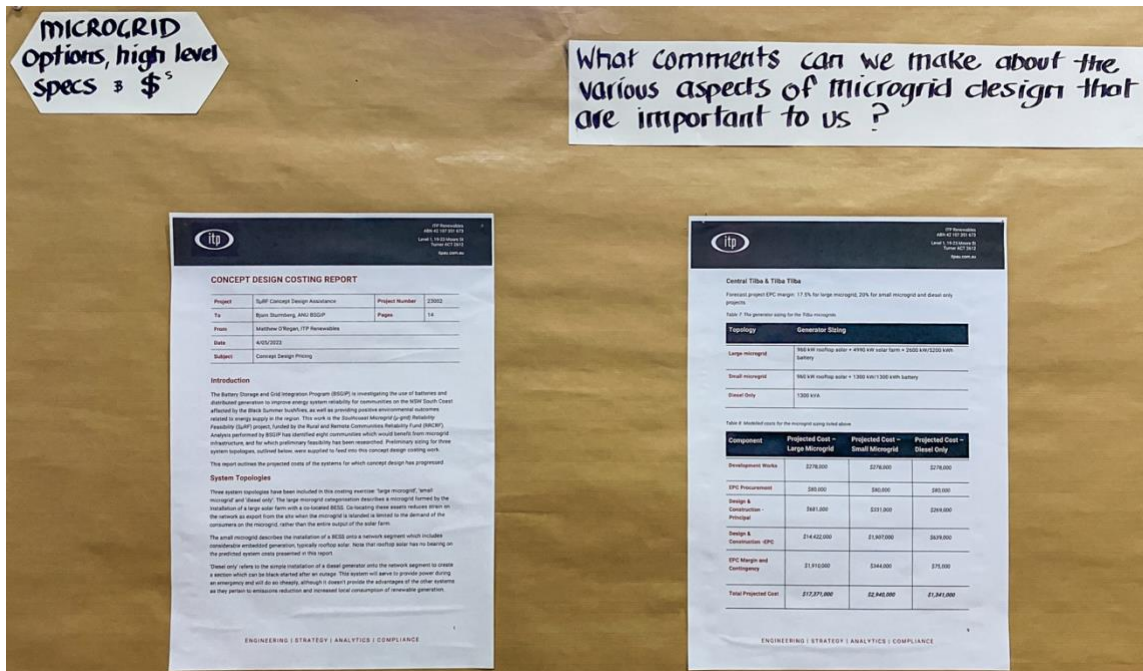
location, while appropriate is for demonstration purposes only

Moderator Notes...

STEP 4

Large Microgrid: High Level Design Concept

Technologies with technical specifications and costings compiled by the SuRF team for the large Microgrid were made available for comment.



Moderator Notes...

STEP 5

Questions, Suggestions/Guidelines

Questions

What control system & Governance arrangements would facilitate the MIG outcomes we are seeking (refer MG mudmaps & objectives)

Will a MG RESULT IN MORE RELIABLE Supply AND cheaper Supply

I ASSUME THE TEAM IS USING A 'GROSSING RATIO' TO ACCOUNT FOR INCREASES IN COMMUNITY SIZE/ENERGY CONSUMPTION.

WHAT IMPACT DOES THE EVER-CHANGING TECHNOLOGY HAVE ANY COST IMPACT ON THE PROJECT? (E.G. UPGRADES OR MAINTENANCE)

It seems the relevance of a microgrid to maintain electricity supply during a bushfire is a key consideration when discussing the usefulness of a microgrid in Tilba.

IVEN NIMBY CONCERNS RE RENEWABLES, AND ISSUES OF ASH + SMOKE IMPACT IN BUSHFIRE, WOULD RELIABILITY OF AN EMERGENCY OUTAGE BE BETTER SERVED BY DIESEL GENS? IN FACT, IS THIS A MG POSSIBILITY?

What are the impacts of EV. vehicles going to make on assumptions?

WOULD IT MAKE ANY MATERIAL DIFFERENCE TO THE COST IF THE 'LARGE SOLAR FARM' WAS BROKEN INTO A COUPLE OF SMALLER ONES?

How can we collaborate with Mystery Bay in a Solar Farm + Battery?

More information on benefits of micro-grid solar for given the fact that Tilba electricity distribution has improved/made more efficient since bushfires. ~~Options~~ could be why bother! What additional info is available

Suggestions/Guidelines

The project shouldabc.... so that.... xyz
The microgrid should...abc.... so that.... xyz

How Can the project put up a scenario of how a microgrid can cope with a bushfire and a power outage which would last maybe a week.

What support after SuRF?

Life Cycle
Cost of Batteries
Solar panels
Is it economic through its life cycle
Aesthetic in a heritage area

QUESTIONS

QUESTION	RESPONSE FROM SuRF Project team
1. What control system and governance arrangements would facilitate the microgrid outcomes (refer to the microgrid mudmaps and objectives) we are seeking?	
2. Will a microgrid result in more reliable supply and cheaper supply?	
3. I assume the team is using a 'grossing ratio' to account or increases in community size/energy consumption?	
4. Does the ever-changing technology have any cost impact on the project? Eg upgrades or maintenance?	
5. It seems the relevance of a microgrid to maintain electricity supply during a bushfire is a key consideration when discussing the usefulness of a microgrid in Tilba	
6. Given NIMBY concerns re renewables, and issues of ash and smoke impact in bushfire, would reliability goal for emergency outage be better served by diesel generators? In fact, is this a microgrid possibility?	
7. What are the impacts of EV vehicles going to make on assumptions?	
8. Would it make any material difference to the cost if the 'large solar farm' was broken into a couple of smaller ones?	
9. How can we collaborate with Mystery Bay in a solar farm and battery?	
10. More information on benefits of microgrid/solar farm, given the fact that Tilba electricity distribution has been improved/made more efficient since bushfires. Response could be by "why bother". What additional information is available?	
11. What support after SuRF?	
12. Is it economic through its lifecycle	

13. Lifecycle cost of batteries	
14. [cost of] Solar panels	

SUGGESTIONS/GUIDELINES

The project should ... abc ... so that ... xyz

The microgrid should ... abc ... so that ... xyz

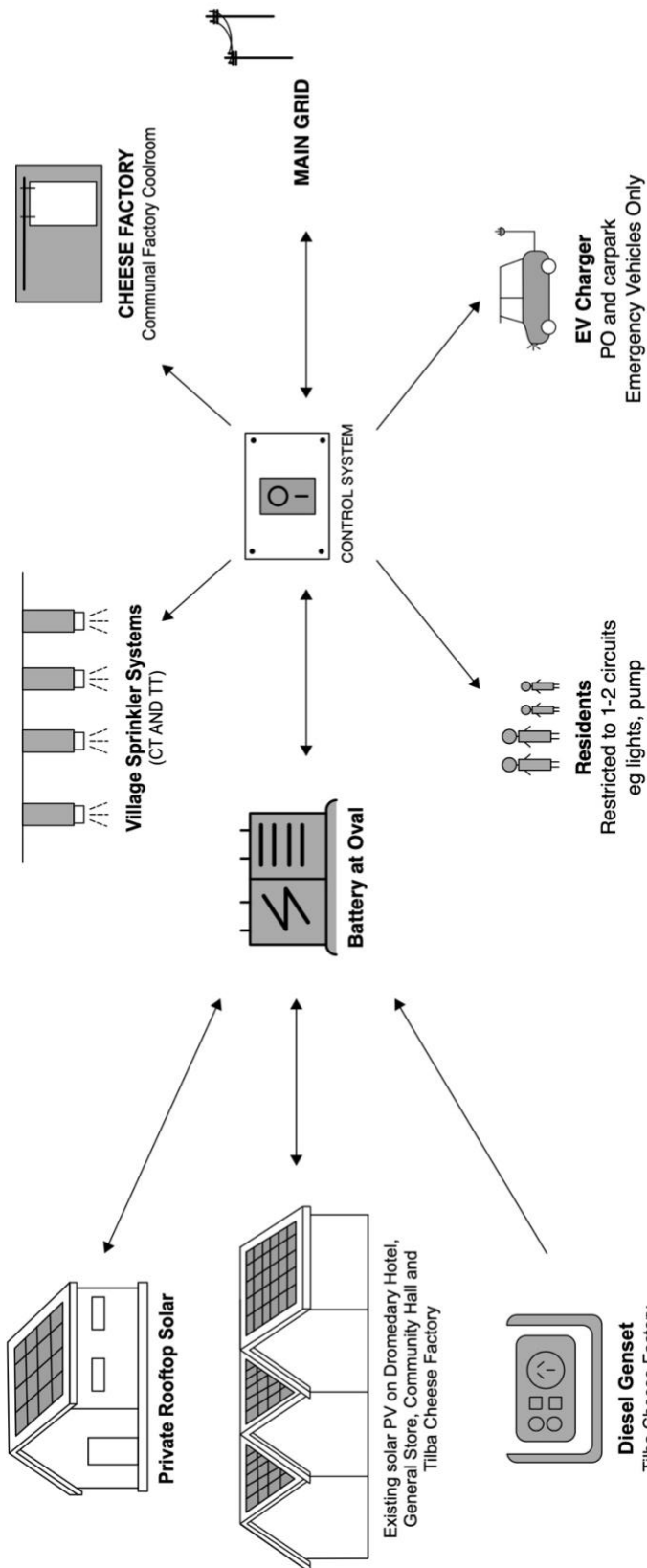
DESIGN GUIDELINE	RESPONSE FROM SuRF Project team
Can the project put up a scenario – Can a microgrid cope with a bushfire and a power outage which would last maybe a week.	
Aesthetics in a heritage area	

FEASIBILITY STUDY ONLY

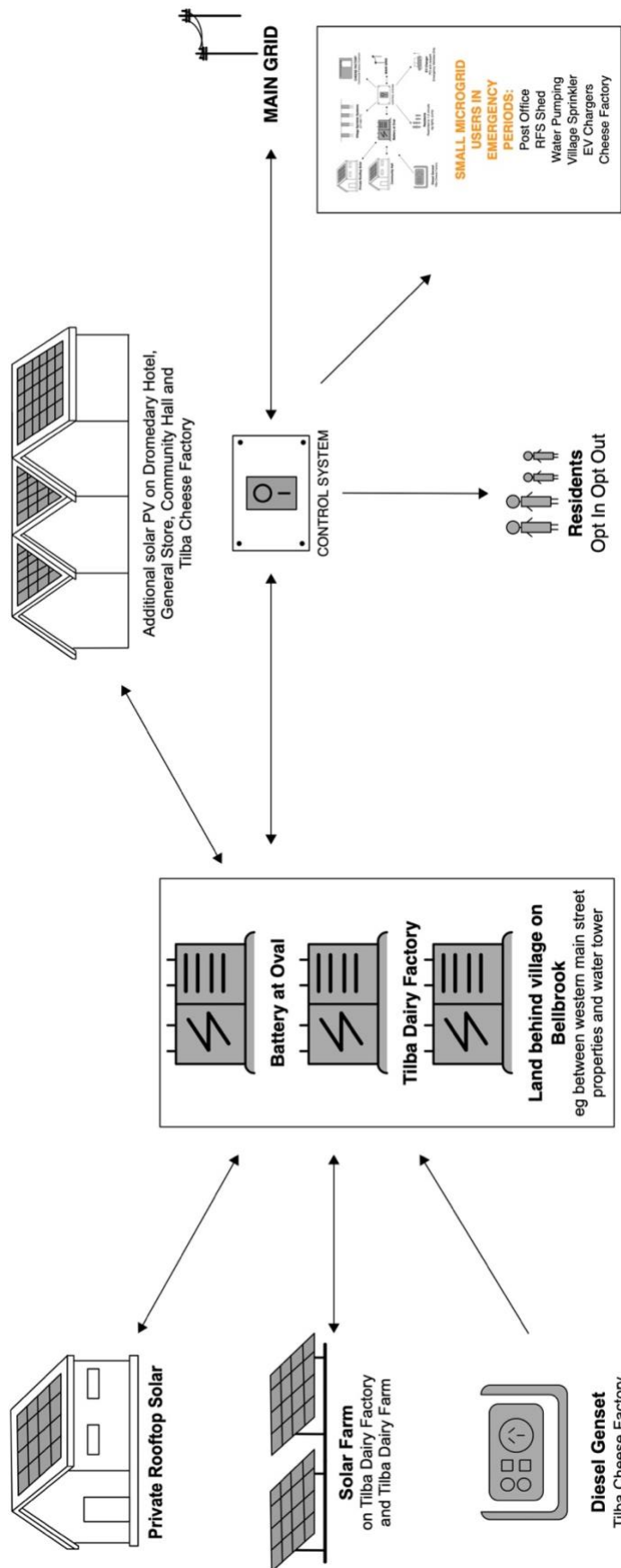
APPENDIX

FEASIBILITY STUDY ONLY

APPENDIX A: SMALL (Type 2) MG design mud map offered from Rd1



APPENDIX B: LARGE (Type 3) MG design mud map offered from Rd1



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Smilie Magill
Greg Wall
Will Maudlin*

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