



South Durras 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*

SOUTH DURRAS COMMUNITY HALL

10 MAY 2023

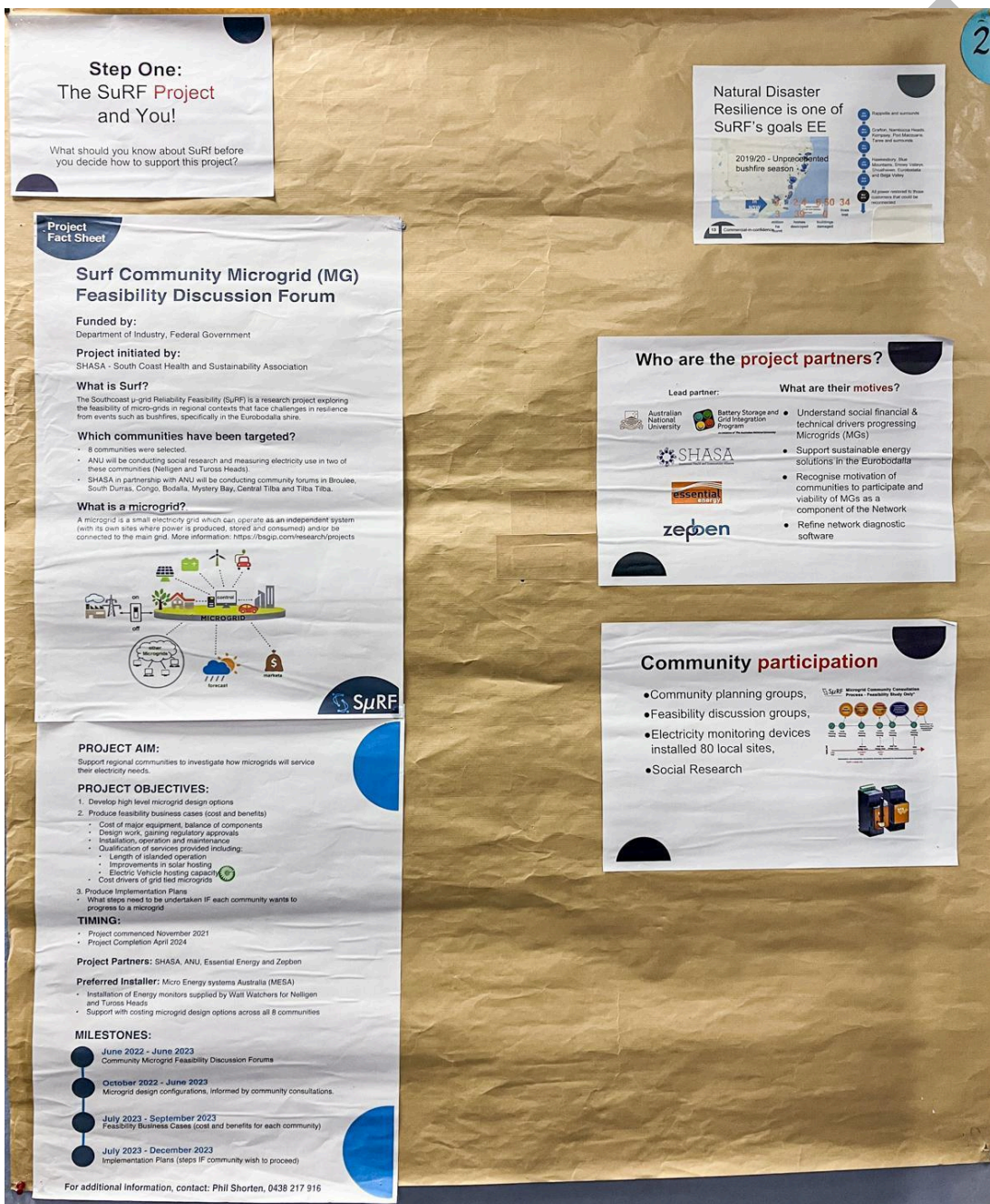
Presented by Hedda Ranson-Cooper (ANU), Warwick Crowfoot & Matt O'Neill (Essential Energy) and Matt O'Regan (ITP). Moderated by Phil Shorten (SHASA)

Introduction and 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.

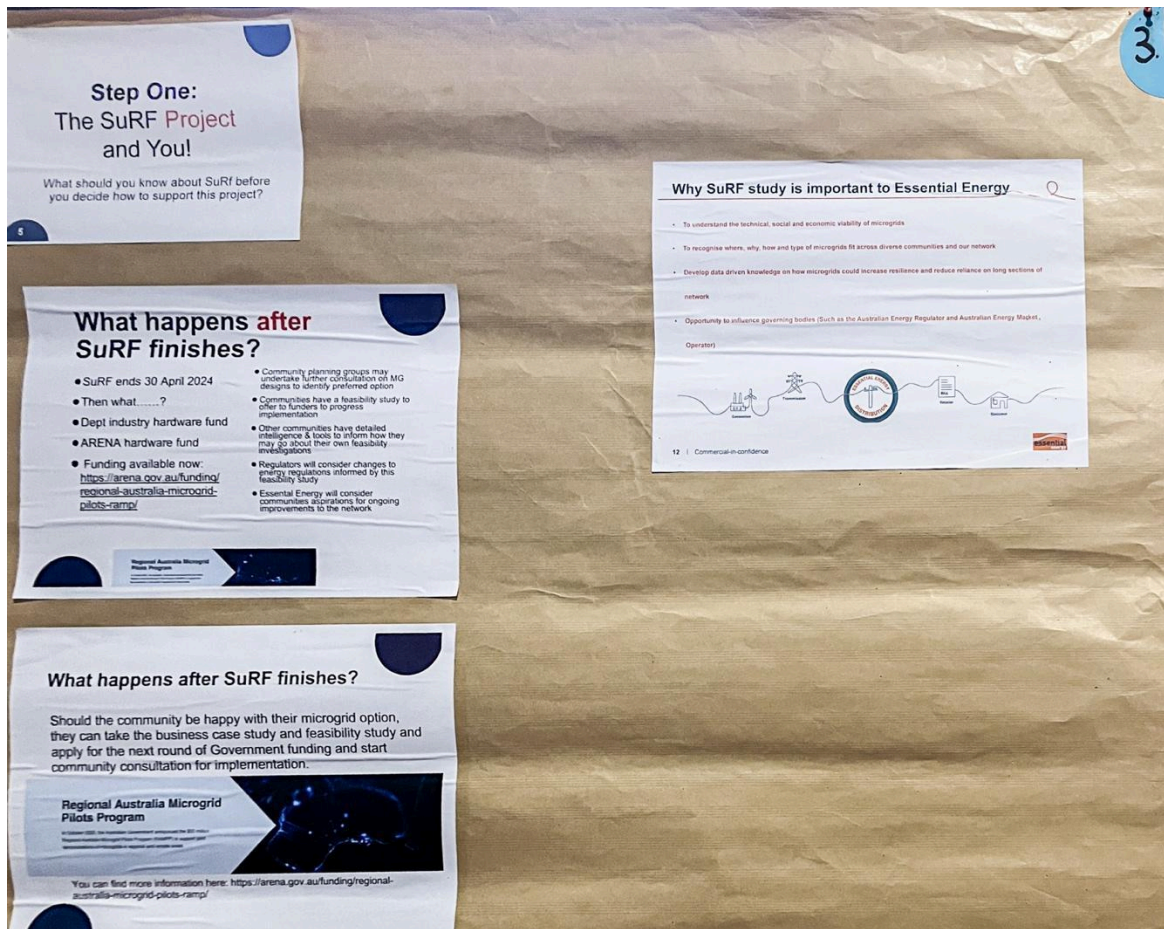
The purpose being to provide information on the context and status of the SuRF Microgrid feasibility study so that those participating leave with a deeper understanding of Microgrids and have a chance to comment on the different aspects of design that are important to them.

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



Moderator Notes...

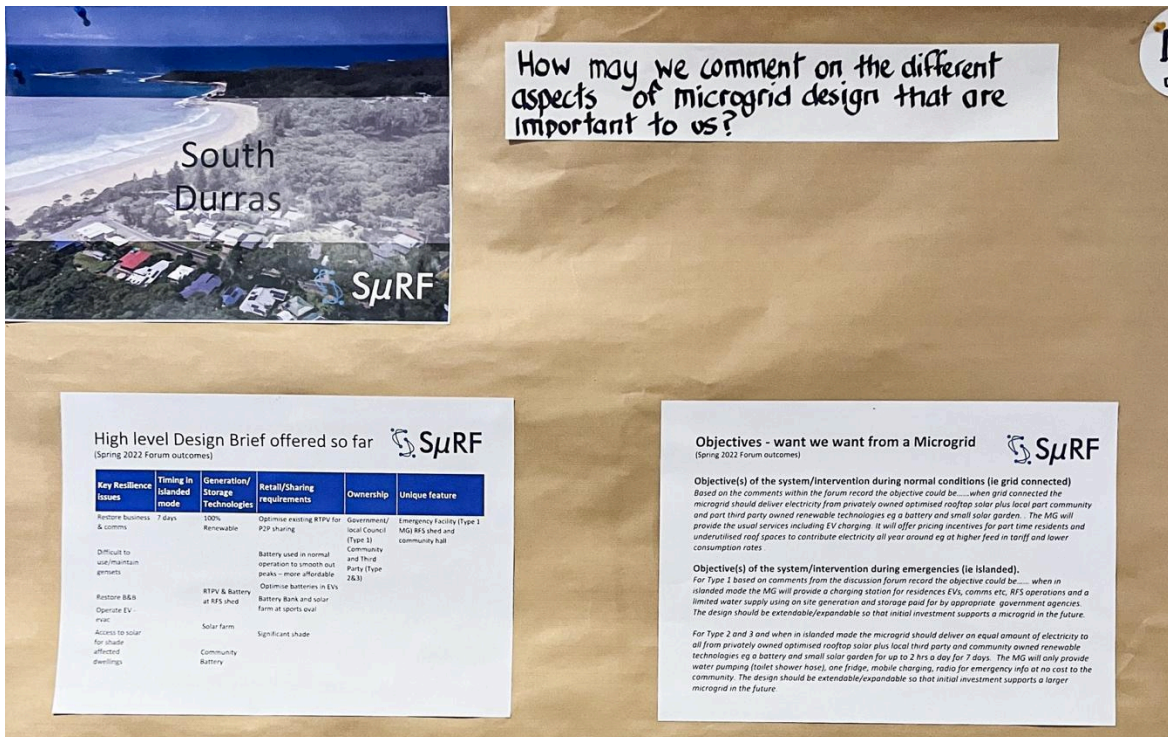
Introduction and Context



Moderator Notes...

STEP 1

Design Objectives from Round 1 Community Discussion Group

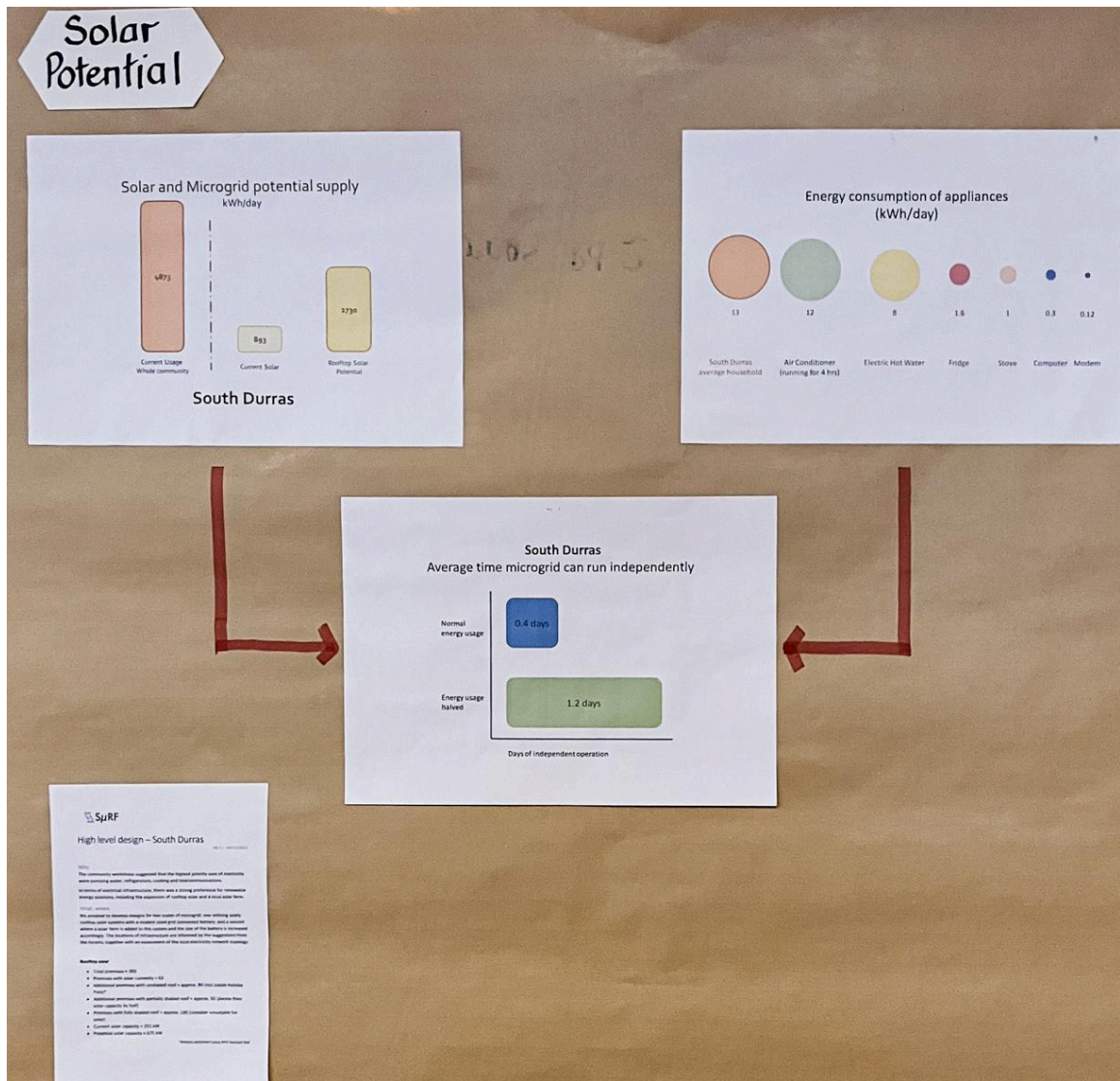


Moderator Notes...

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.

Small Microgrid

South Durras SINGLE SITE Type 1 MG Mudmap

(Rd1 discussions held Spring 2022)

South Durras SINGLE SITE Type 1 MG Guidelines

(from Rd 1 discussions held Spring 2022)

- Type 1 Emergency services only
- SHOULD Run for 7 days (say 2-3 hours a day)
- SHOULD BE simple to operate so that "anyone" can operate it
- SHOULD BE as self running as possible so that little or no intervention is required
- SHOULD BE extendable/expandable so that initial investment can continue to support a growing community and accommodate an expanded MG
- SHOULD provide a "charging station" for personal devices eg phones torches etc so that all people "staying" in an emergency can maintain essential services

(Copyright from Record # Forum Rd 1 Discussion)

South Durras SMALL Type 2 MG Mudmap

(from Rd 1 discussions held Spring 2022)

South Durras SMALL Type 2 MG Guidelines

(from Rd 1 discussions held Spring 2022)

- Durras needs a micro grid so that next time we are without power we are not all running generators
- Storage – a battery for the suburb fed by power from the grid and roof top solar excess
- Smart Grid – battery power used in normal times to smooth out reliance on main grid – make more affordable power. Don't save use of battery just for emergency
- We should have an emergency power supply that automatically turns on/off so that we are not reliant on a person to turn the supply on/off when mains power is lost and restored
- LIMITS – only need to run water pumps, lights – do not need hot water systems, AC etc (Page 25 - 34)

(Copyright from Record Forum Rd 1 Discussion)

South Durras SMALL Type 2 MG Guidelines

(from Rd 1 discussions held Spring 2022)

- SHOULD run for 7 days SO THAT - community can continue to function
- We should do this in conjunction with council so that it is not for profit
- We should be able to access battery regularly at night so that we reduce some of electricity supply costs
- We would like the battery to feed the grid at all times and back up generator for emergency situations
- We should build in Battery storage capacity to service our essentials during an outage say 2 hours (or SAIDI)

(Copyright from Record Forum Rd 1 Discussion)

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.

Small Microgrid

Technology - BESS

SuRF Concept Designs

Concept designs are split into large and small microgrids.

Large:

- Solar Farm
- Co-located Battery Energy Storage System (BESS)

Small:

- Community BESS (with rooftop solar)

SuRF Concept Designs - South Durras

South Durras concept design:

Topology	Generator Sizing
Large microgrid	Insufficient space available for large ground-mounted PV array
Small microgrid	700 kW rooftop solar + 1200 kWh/200 kWh battery
Small Only	1200 kWh

SuRF Concept Designs

Inputs for concept design development:

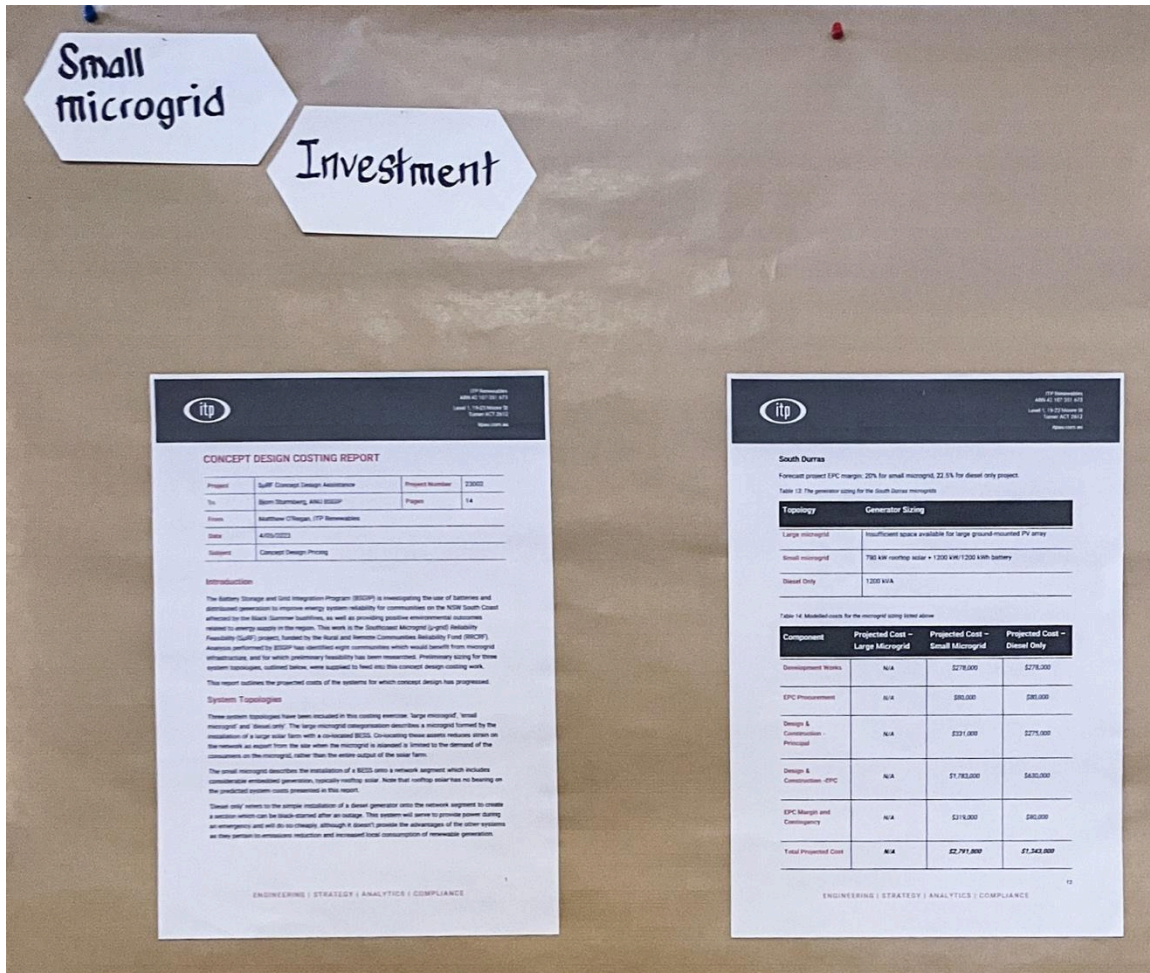
- Sizing information provided by the ANU
- 11/33kV line constraints
- Zone substation constraints
- Essential Energy/AEMO connection application constraints

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...

FEASIBILITY

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.

Large Microgrid

South Durras LARGE Type 3 MG Guidelines SuRF
(Rd 1 Community discussions held Spring 2022)

- We want the MG to cover us indefinitely - eg prolonged major disaster
- We want the oval solar farm to balance for those houses that cannot install rooftop solar
- Provide an incentive to non permanent residents to contribute to solar input to MG (to use all roof resources)
- Incentive for non permanents and for large home system - only pay for what they use in excess of what they put in
- We should have so much power in our system that we can trade power on the electricity grid
- We should have a system that allows everyone in the community to participate and benefit

South Durras LARGE Type 3 MG Guidelines SuRF
(Rd 1 Community discussions held Spring 2022)

- We want/the MG should be underground so that it is protected from fire and trees - looks better too!
- We want the caravan parks to be a part of the MG but they must pay their way (and not make it unreliable). We want the caravan park resources and facilities to enhance the overall community MG capacity - especially at the peak load times.
- We want the caravan parks to be outside the community MG so that Christmas load doesn't derail MG
- We want a MG to cover 2 hour outages so that covers most outages

South Durras LARGE Type 3 MG Guidelines SuRF
(Rd 1 Community discussions held Spring 2022)

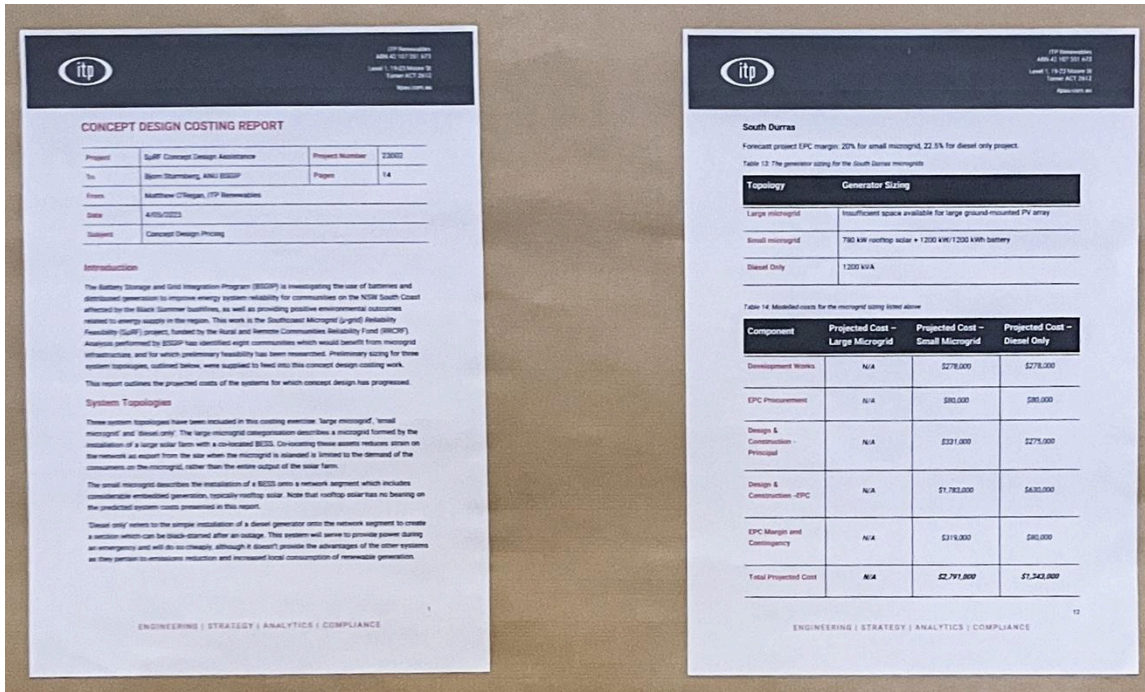
- We should have enough power so that we can be in Island mode for seven days
- We should have enough storage to have power at night and when the sun doesn't shine (Page 25 - 34)
- Have a system for solar generators to get more \$ than current
- Also if people don't generate they can buy power from microgrid at cheaper rates than mainstream (page 11)

Moderator Notes...

STEP 4

Large Microgrid: High Level Design Concept

Technologies, Technical specifications and costings for the large Microgrid were not developed due to the lack of appropriate land being available for a solar farm



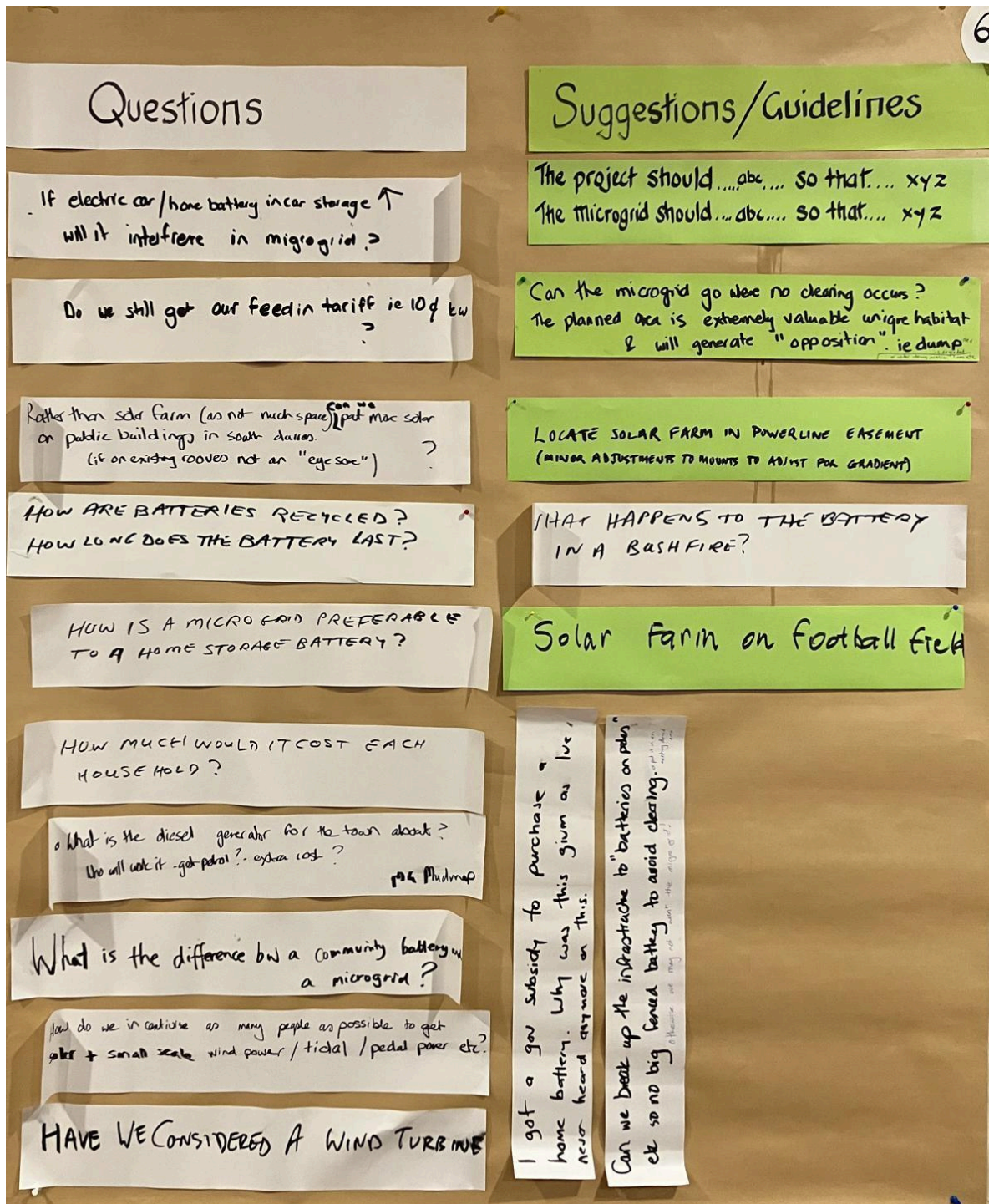
Moderator Notes...

No large microgrid design was offered due to the absence of sufficient cleared land to accommodate a solar farm.

The SuRF team will produce alternative Microgrid and other options later that may be suitable for South Durras. These options will be informed by the design guidelines offered during both community forums (Round 1 & 2).

STEP 5

Questions, Suggestions/Guidelines



Questions

If electric car/home battery in car storage ↑
will it interfere in microgrid?

Do we still get our feed in tariffs ie 10¢ kw?

Rather than solar farm (as not much space) put more solar on public buildings in South Durras. (if on existing rooves not an "eyesore")

HOW ARE BATTERIES RECYCLED?
HOW LONG DOES THE BATTERY LAST?

HOW IS A MICRO GRID PREFERABLE TO A HOME STORAGE BATTERY?

HOW MUCH WOULD IT COST EACH HOUSEHOLD?

What is the diesel generator for the town about?
Who will use it - get petrol? - extra cost?

What is the difference b/w a community battery & a microgrid?

How do we in continue as many people as possible to get solar + small scale wind power / tidal / pedal power etc?

HAVE WE CONSIDERED A WIND TURBINE?

Suggestions/Guidelines

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

Can the microgrid go where no clearing occurs?
The planned area is extremely valuable unique habitat & will generate "opposition" ie dump

LOCATE SOLAR FARM IN POWERLINE EASEMENT (MINOR ADJUSTMENTS TO MOUNTS TO ADJUST FOR GRADIENT)

WHAT HAPPENS TO THE BATTERY IN A BUSH FIRE?

Solar Farm on football field

I got a gov subsidy to purchase a home battery. Why was this given as I've never heard anyone or this.

Can we break up the infrastructure to "batteries on poles" etc so no big fenced battery to avoid clearing.

QUESTIONS

QUESTION	RESPONSE FROM SuRF Project team
1. If electric car/home battery in car storage increases, will it interfere in microgrid?	
2. What is the diesel generator for the town about? Who will work it? Get petrol? Extra cost? (MG mudmap)	
3. Do we still get our feed in tariff i.e. 10cents per kw?	
4. SHOULD BE - extendable/expandable 5. SO THAT initial investment can continue to support a growing community	
6. Rather than solar farm (as not much space), can we put more solar on public buildings in south durras? (if on existing rooves not an "eye sore")?	
7. How are batteries recycled? How long does the battery last?	
8. How is a microgrid preferable to a home storage battery?	
9. How much would it cost each household?	
10. What is the difference between a community battery and a microgrid?	
11. How do we incentivise as many people as possible to get solar and small scale wind power/tidal/pedal power etc?	
12. Have we considered a wind turbine?	
13. What happens to the battery in a bushfire?	
14. I got a government subsidy to purchase a home battery. Why was this given as I've never heard anymore on this	
15. Can we break up the infrastructure to "batteries on poles" etc so no big fenced battery to avoid clearing. Or put it in an existing cleared area otherwise we may not want the microgrid!	
16. What is the difference between a community battery and a microgrid?	
17. Do we still get our feed in tariff i.e. 10cents per kw?	

18. Can the microgrid go where no clearing occurs?	
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SUGGESTIONS/GUIDELINES

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

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

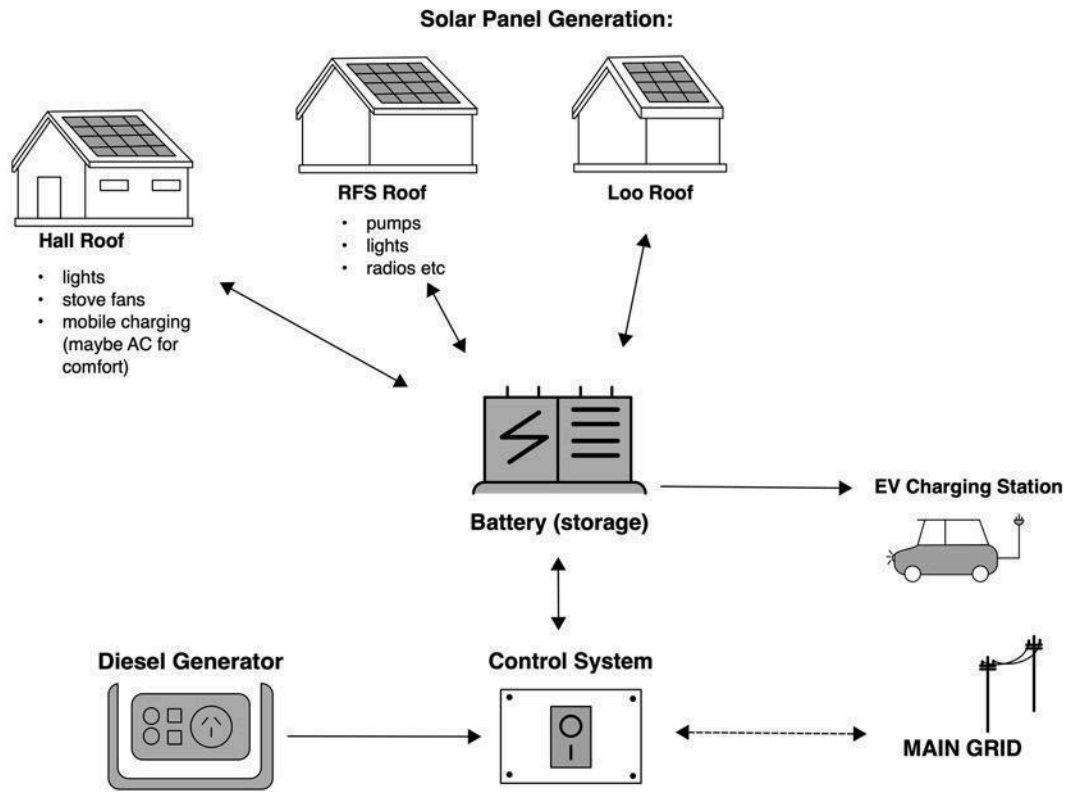
DESIGN GUIDELINE	RESPONSE FROM SuRF Project team
Locate solar farm in powerline easement (minor adjustments to mounts to adjust for gradient)	
The planned area is extremely valuable unique habitat and will generate "opposition" i.e. <i>Preferred space would be a dump area is degraded or under transmission lines etc</i>	
Solar farm on football field	

FEASIBILITY STUDY ONLY

APPENDIX

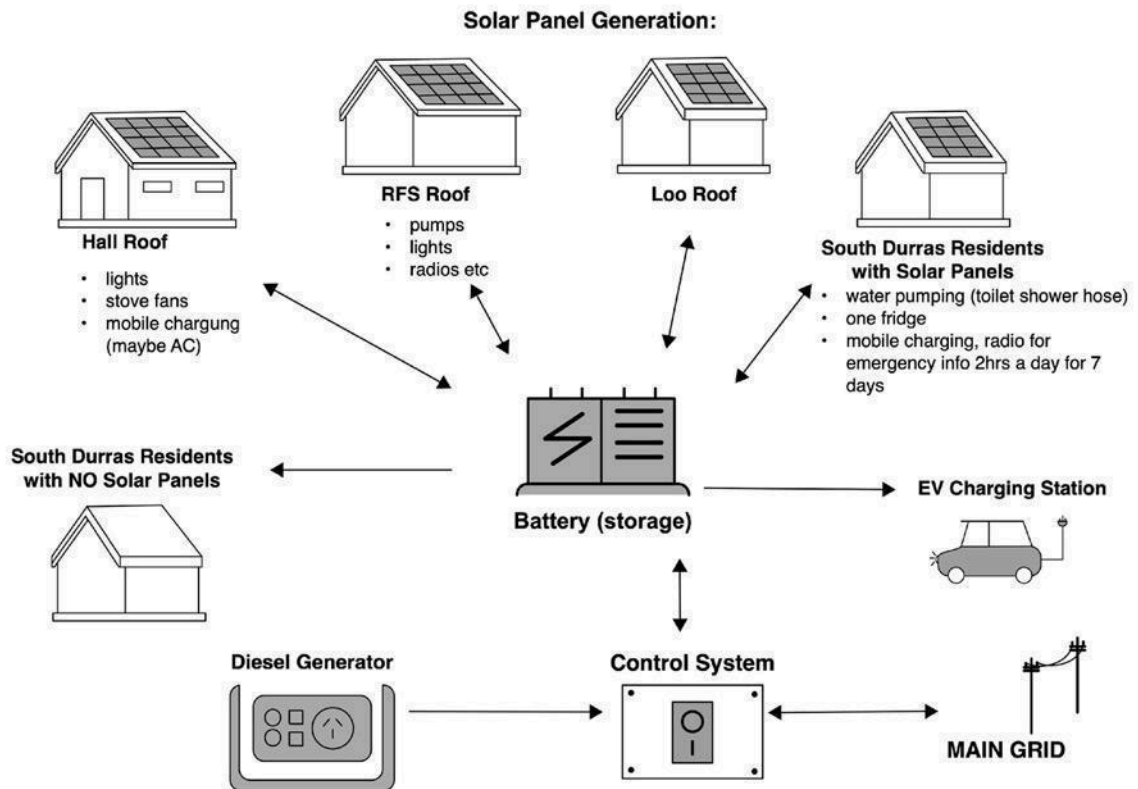
FEASIBILITY STUDY ONLY

APPENDIX A: SINGLE SITE Type 1 MG Mudmap



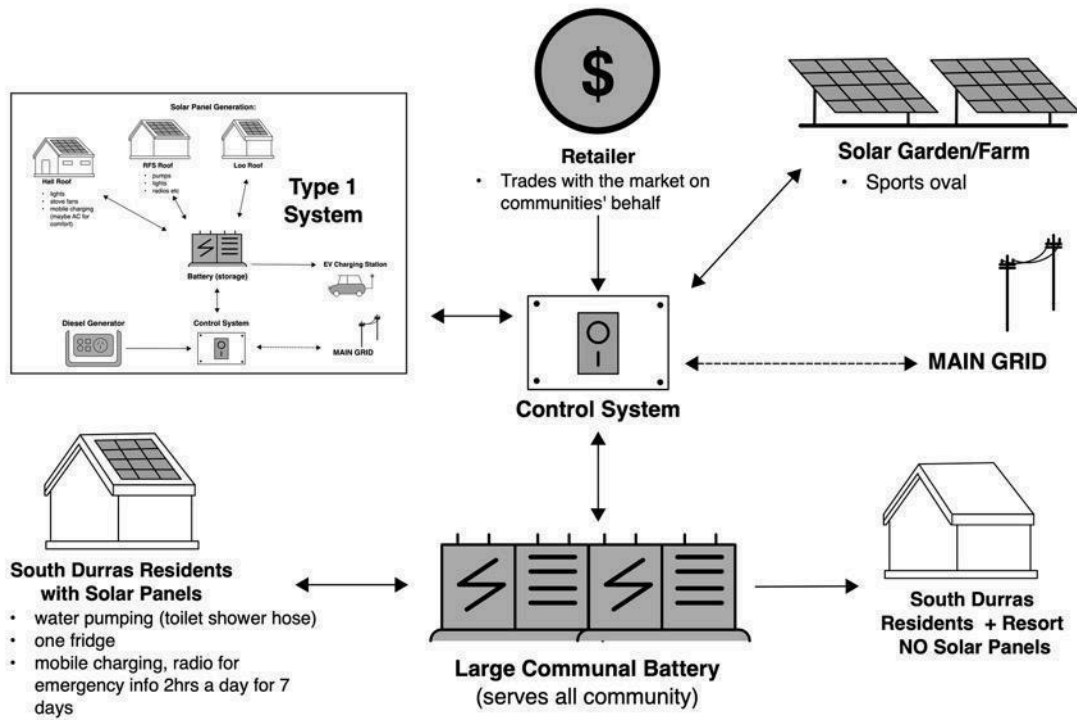
FEASIBILITY 2

APPENDIX B: SMALL Type 2 MG Mudmap



FEASIBILITY

APPENDIX C: LARGE Type 3 MG Mudmap



FEASIBILITY

ACKNOWLEDGEMENTS

The SuRF project team consists of: The Australian National University, SHASA, Zepben and Essential Energy.



The SuRF team would like to thank ITP for their valuable analysis and concept design insights.

The SuRF project team would like to acknowledge and thank the members of the South Durras community who gave their time, provided their insights and support for this important Microgrid feasibility work

Geoff Bartram

Wayne Montgomery

Noel Tait

Mike Reynolds

Peter Nicholson

The SuRF project team acknowledges that we meet at various locations across the traditional lands of the Yuin People. We pay our respects to the Elders, past, present and future.

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