Bango Wind Farm

CWPRenewables

NSW Planning Assessment Commission Proponent Meeting

14 March 2018



An Introduction to CWP



- CWP are a long-established renewable energy developer, owner and asset manager. The company has over two decades of renewable energy development experience and offices in New South Wales (NSW), Queensland, South Australia and the Australian Capital Territory, with key development activities coordinated from the NSW base in Newcastle.
- Wind farm development has been the focus of the company over the past decade and within Australia this has resulted in over 380 megawatt (MW) of greenfield projects having been developed, financed and either under construction or in full operation since 2013. This includes the award-winning 113MW Boco Rock wind farm development south of Cooma, NSW, and 270MW Sapphire wind farm, the largest in size and capacity in the New England, NSW.
- CWP is currently developing the 170MW Sapphire solar + storage project, a hybrid renewable energy development alongside Sapphire wind farm. Together with the merchant portion of the wind farm, this project will be able to deliver firm, reliable and dispatchable electricity into the NEM – setting a new paradigm for the sector.



Community Engagement Award Winner 2014

ProjectFinance Deals of the Year 2013

Winner Asia-Pacific Deal of the Year 2013

Overview



- Following extensive community consultation, the Project layout has undergone significant reductions over time.
- ➡ We consider that overall, the DPE Assessment is fair and has captured these changes.
- However, we believe visual impacts are over-estimated for selected non-involved residences.
- Mitigations recommended by DPE include:
 - Four turbines are recommended for removal.
 - Two turbines are subject to Neighbour Agreements.
 - Three turbines are "finely balanced".
- We contend that the recommended mitigations are excessive and will not materially reduce visual impacts at the relevant residences.



STATE SIGNIFICANT DEVELOPMENT ASSESSMENT Bango Wind Farm (SSD 6686)



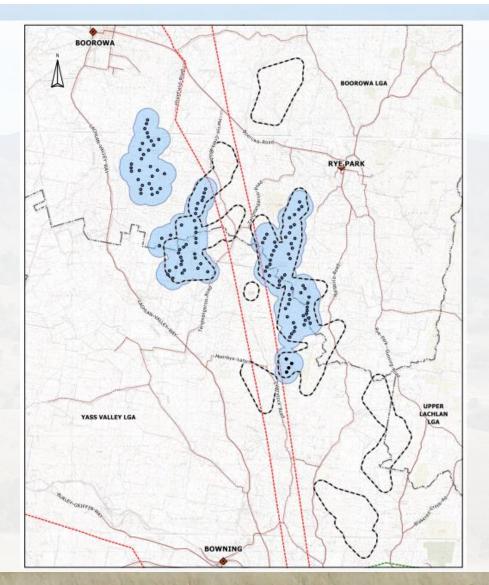
Assessment Report Section 89E of the Environmental Planning and Assessment Act 1979

February 2018

Confidential: Do Not Disclose.

Mitigations through Development

- Extensive community consultation undertaken throughout development of the Project since 2011.
- Modifications were made to the Project based on a number of factors, including:
 - Stakeholder feedback regarding land use and land use changes
 - Consideration of the Draft Planning Guidelines for Wind Farms
 - Ongoing stakeholder consultation
- Significant reduction in the Project area over time:
 - PEA (dashed lines)
 - EIS (blue shading)

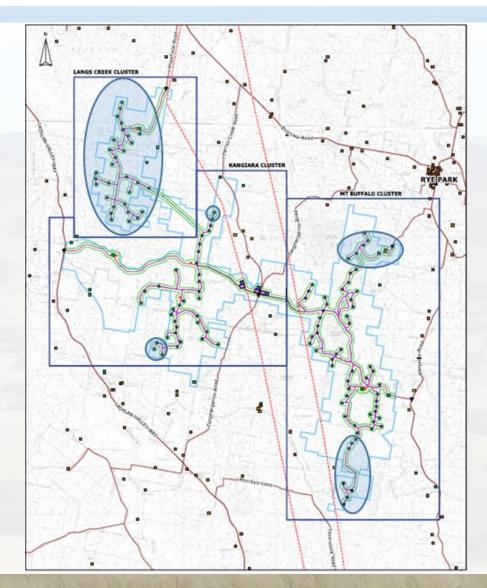




Confidential: Do Not Disclose.

Mitigations through Development

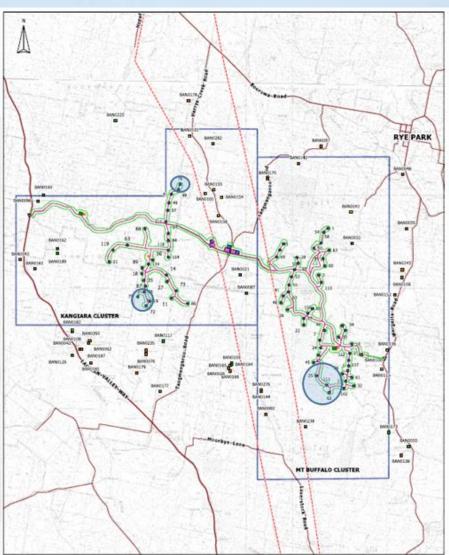
- During the EIS and the Assessment, further alterations made to mitigate potential impacts.
- Langs Creek Cluster entirely removed.
- 📕 Kangiara Cluster
 - 2 turbines removed from the north
 - 3 turbines removed from the south
- Mt Buffalo Cluster
 - 5 turbines removed from the north
 - 7 turbines removed from the south
- Reduced from 122 turbines to 75 turbines.
- A significant reduction in the potential capacity of the Project, but an acceptable outcome given the concerns of neighbouring residences.





Mitigations through Development

- DPE has recommended further changes to the Project based on perceived visual impacts.
- We contend that the changes would further reduce the project's potential and not have a corresponding benefit on the community.
- These changes include:
 - Removal of a further four turbines from the south of Kangiara Cluster (19, 65, 72 and 79).
 - Two turbines subject to a Neighbour Agreement from the north of Kangiara Cluster (76 and 98).
 - Three turbines are considered "finely balanced" by the Department in Mt Buffalo Cluster (25, 62, 111).
- We consider the screening provisions to adequately address the impacts without the recommended changes above.



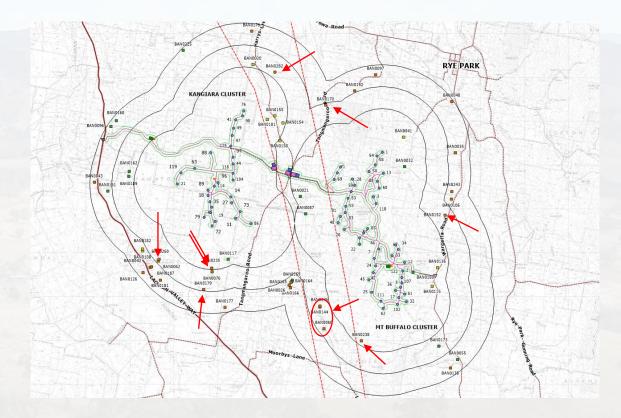


Non Associated Landowners



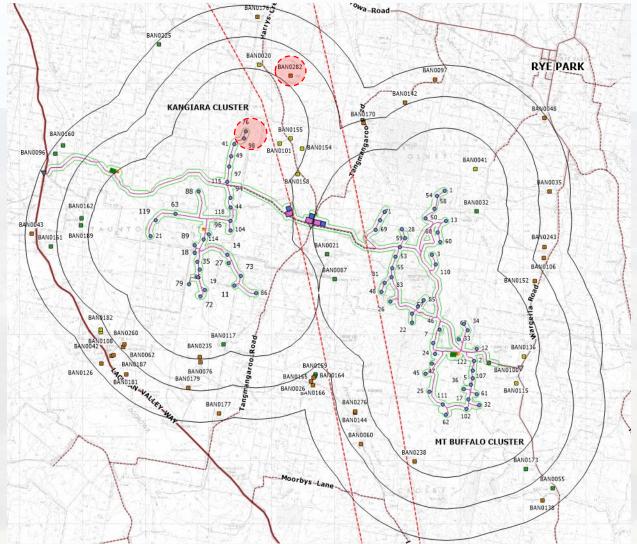
The Non-associated Landowner information in the DPE Assessment requires updating.

- 2 non-associated residences within 2 km (rather than 8)
- 9 non-associated residences 2-3 km away (rather than 12)
- 16 non-associated residences 3-4 km away (rather than 17)



Visual and Noise Mitigation: BAN 282





BAN282

- Nestled amongst trees
- Oriented north
- WTG 76 is 2.2km away
- WTG 98 is 2.4 km away



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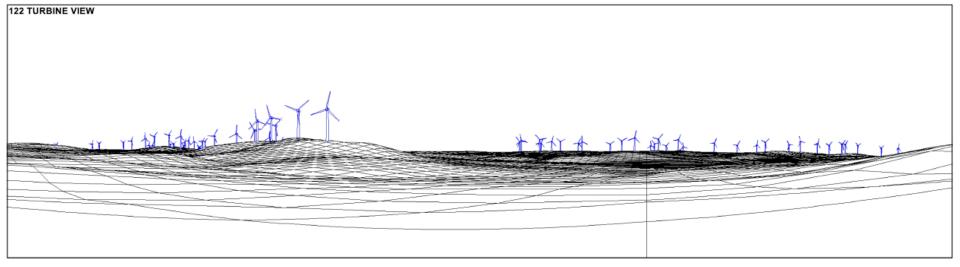
Visual and Noise Mitigation: BAN 282

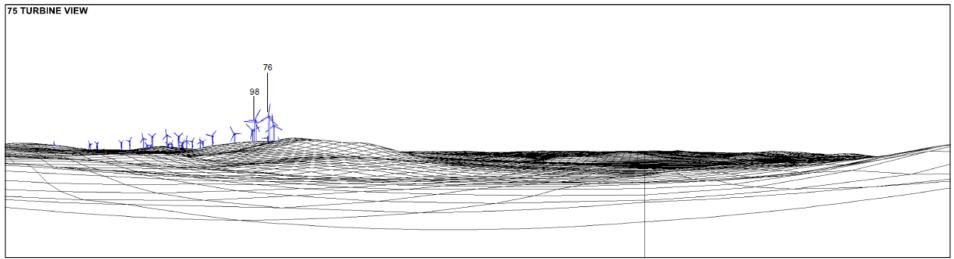


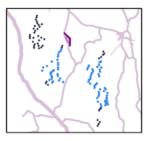
Noise modelling indicates that there will be no exceedance even under the most extreme noise conditions for the current layout.

Bango Wind Farm Supplementary Environmental Noise Assessment S3958C12 May 2017

	Representative Logging Location							N	oise	Lev	el (dB(A	.)) a	t Int	ege	r Wi	nd s	Spee	d						
Reœiver ID		3m/s		4m/s		5m/s		6m/s		7m/s		8m/s		9m/s		10m/s		11m/s		12m/s		13m/s		14m/s	
		Criterion	Prediction																						
BAN0187	BAN0076	36	20	36	20	36	20	37	23	37	26	37	29	37	30	38	30	38	30	40	30	41	30	44	30
BAN0189	BAN0009	45	23	45	23	45	23	45	25	45	29	45	31	45	33	45	33	45	33	45	33	45	33	45	33
BAN0212	BAN0048	35	13	35	13	37	13	38	16	39	19	40	22	40	23	41	23	42	23	43	23	45	23	47	23
BAN0215	BAN0048	35	13	35	13	37	13	38	16	39	19	40	21	40	23	41	23	42	23	43	23	45	23	47	23
BAN0217	BAN0048	35	13	35	13	37	14	38	16	39	19	40	22	40	23	41	23	42	23	43	23	45	23	47	23
BAN0225	BAN0009	45	17	45	17	45	17	45	19	45	23	45	25	45	27	45	27	45	27	45	27	45	27	45	27
BAN0235	BAN0076	36	26	36	26	36	26	37	29	37	32	37	35	37	36	38	36	38	36	40	36	41	36	44	36
BAN0238	BAN0060	35	27	35	27	35	27	35	29	35	33	35	35	35	37	35	37	37	37	39	37	42	37	46	37
BAN0243	BAN0152	35	21	35	21	36	22	36	24	37	28	37	30	38	32	39	32	40	32	42	32	44	32	47	32
BAN0260	BAN0076	36	22	36	22	36	22	37	25	37	28	37	31	37	32	38	32	38	32	40	32	41	32	44	32
BAN0274	BAN0048	35	13	35	13	37	13	38	16	39	19	40	22	40	23	41	23	42	23	43	23	45	23	47	23
BAN0276	BAN0144	35	25	35	25	35	25	35	28	35	31	35	34	35	35	36	35	37	35	40	35	42	35	45	35
BAN0280	BAN0076	36	15	36	15	36	16	37	18	37	21	37	24	37	26	38	26	38	26	40	26	41	26	44	26
BAN0282	BAN0155	35	22	35	22	35	23	35	25	35	28	35	31	35	33	35	33	35	33	37	33	40	33	43	33







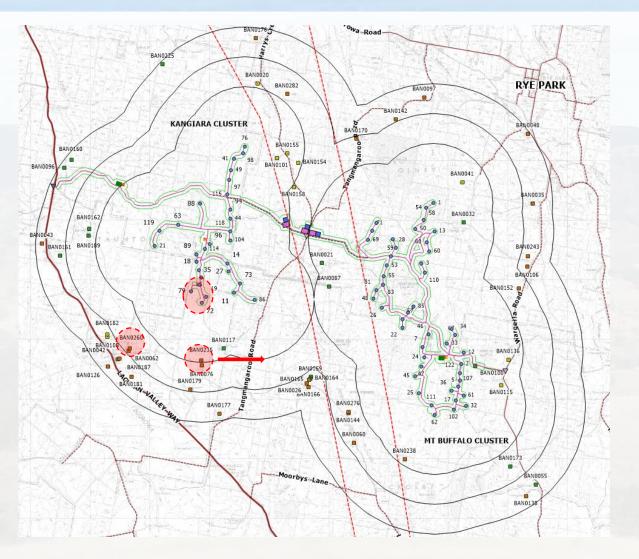
BANGO WIND FARM: BAN282 LEMBIT

Grid reference: 666684E 6178400N Viewpoint elevation: 574 m AHD Camera height: 2 m Turbine blade tip height: 200 m View direction: 247° Included angle: 130° Distance to nearest turbine: 2.2 km

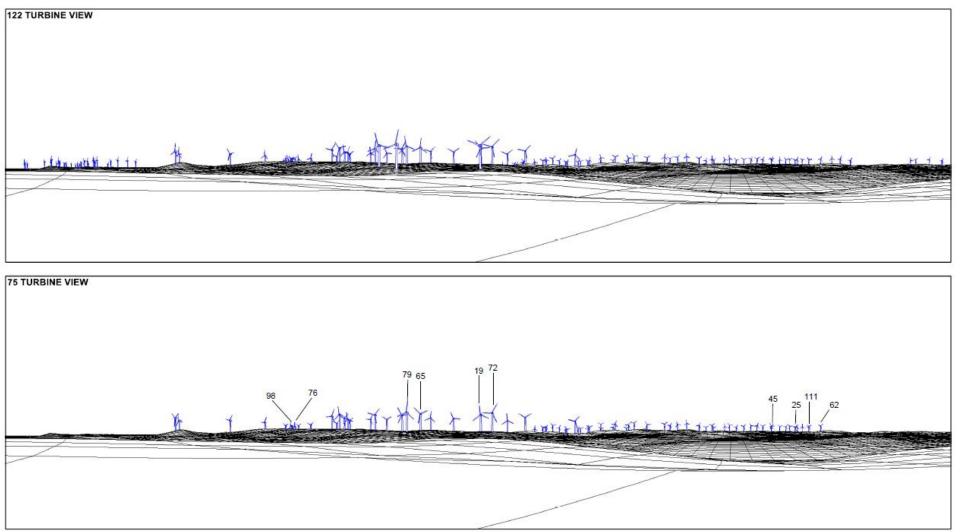


Visual Analysis: Kangiara South

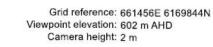




- BAN 62, 76, 235 & 260
- BAN 235:
 - 1.9 km from WTG 72
 - 2.5 km from WTG 65
- 3 WTGs already removed from this area
- The following photomontages and wireframes help us see the visual impacts
- We will visit this location on our site visit for a better appreciation.
- 76 is predominantly east-facing.



BANGO WIND FARM: BAN260 SHAW

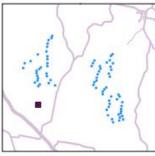


Turbine blade tip height: 200 m View direction: 55° Included angle: 130° Distance to nearest turbine: 2.8 km





DPE PROPOSED REVISION



BANGO WIND FARM: PM13 LAVERSTOCK COTTAGE

 Grid reference:
 663849E 6169495N

 Viewpoint elevation:
 570 m AHD

 Turbine blade tip height:
 200m

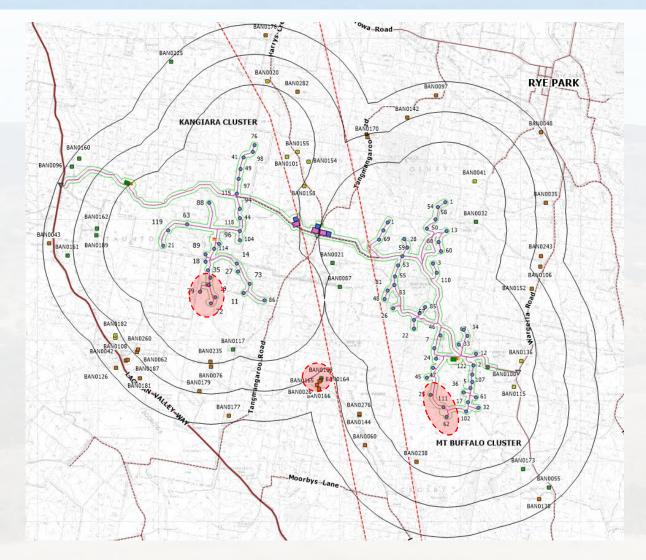
 Date/time photogrpah taken:
 02/05/2013 11.15 am

View direction: 43° Included angle: 119° Distance to nearest turbine: 1.9 km

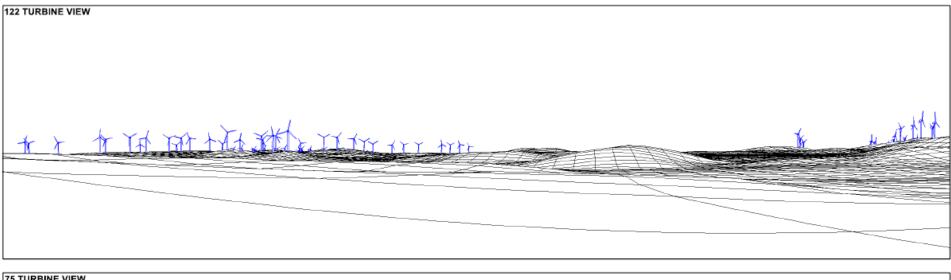


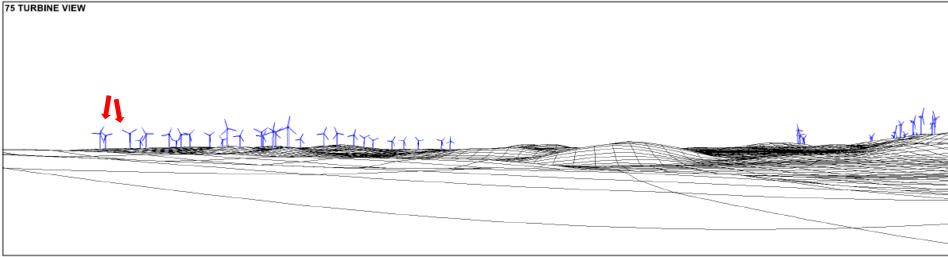
Visual Mitigation: Southern Residences





- BAN 26, 65 and 166
- These residences are over 3 km from any WTG
- Removal of a small number from any area will make little to no difference to their visual amenity



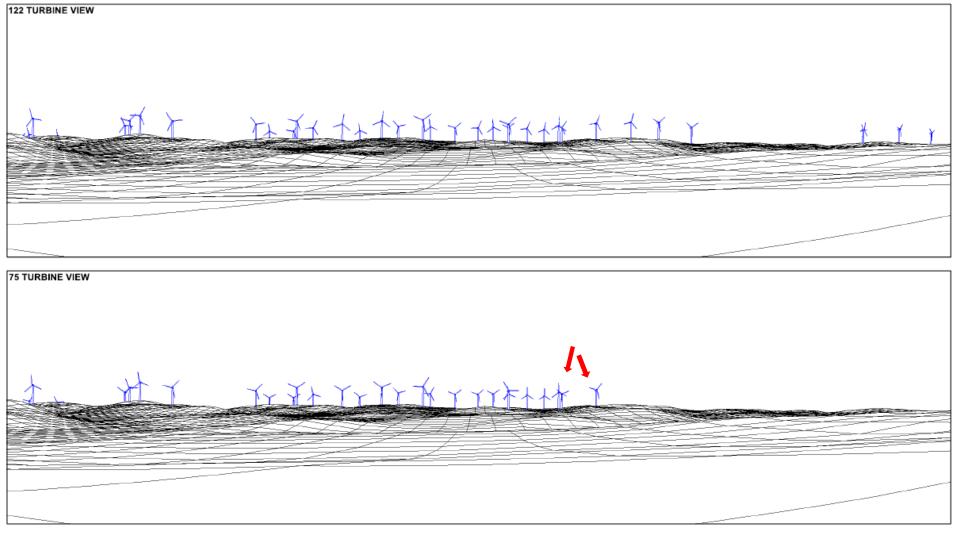




BANGO WIND FARM: BAN166 RONEA PARK (LEFT VIEW)

Grid reference: 667439E 6168579N Viewpoint elevation: 595 m AHD Camera height: 2 m Turbine blade tip height: 200 m View direction: 348° Included angle: 100° Distance to nearest turbine: 3.4 km







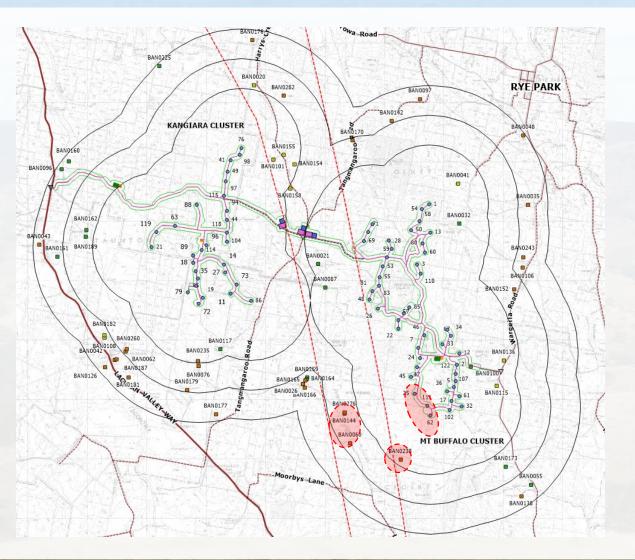
BANGO WIND FARM: BAN166 RONEA PARK (RIGHT VIEW)

Grid reference: 667439E 6168579N Viewpoint elevation: 595 m AHD Camera height: 2 m Turbine blade tip height: 200 m View direction: 90° Included angle: 100° Distance to nearest turbine: 3.4 km

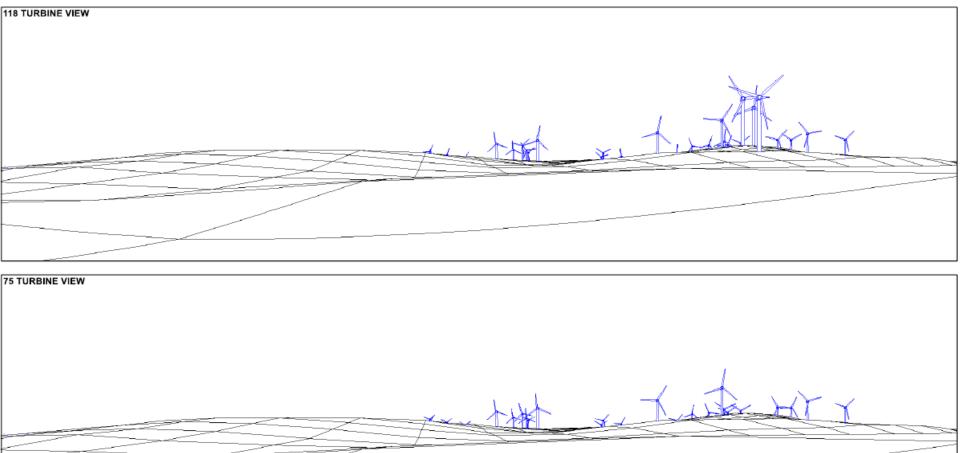


Visual Mitigation: Mt Buffalo





- Residence 60, 144, 238
- Three turbines considered "finely balanced"
- 7 WTGs already removed from this area
- BAN238 is screened by topography
- 60 and 144 are well-over 2km from any proposed WTG location and removal of any of these would make no material difference to the visual impacts.
- Screening more effective



BANGO WIND FARM: BAN238 BROOKDALE

Grid reference: 670661E 6166182N Viewpoint elevation: 638 m AHD Camera height: 1.7 m

Turbine blade tip height: 200 m View direction: 5° Included angle: 116° Distance to nearest turbine: 1.8 km





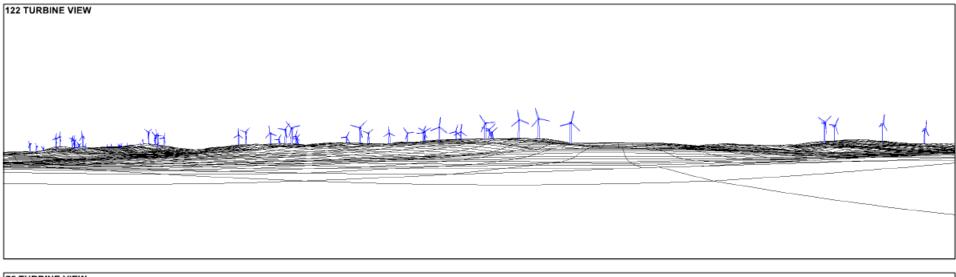


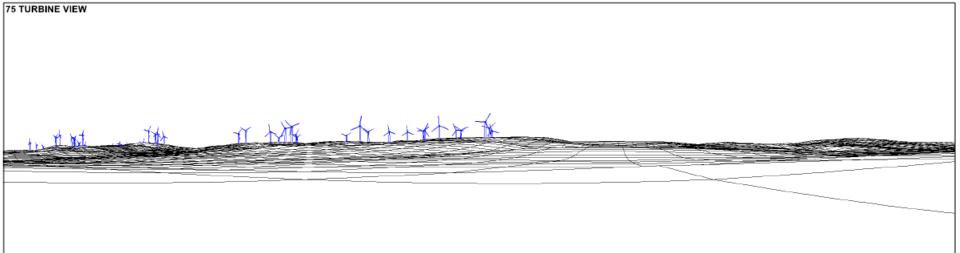
BANGO WIND FARM: PM22 BROOKDALE

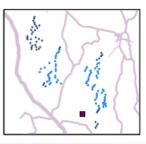
Grid reference: 670661E 6166182N Viewpoint elevation: 638 m AHD Camera height: 1.7 m Date/time photograph taken: 26/09/2012 10.30 am

Turbine blade tip height: 200 m View direction: 5° Included angle: 116° Distance to nearest turbine: 1.8 km Viewing distance: 200 mm





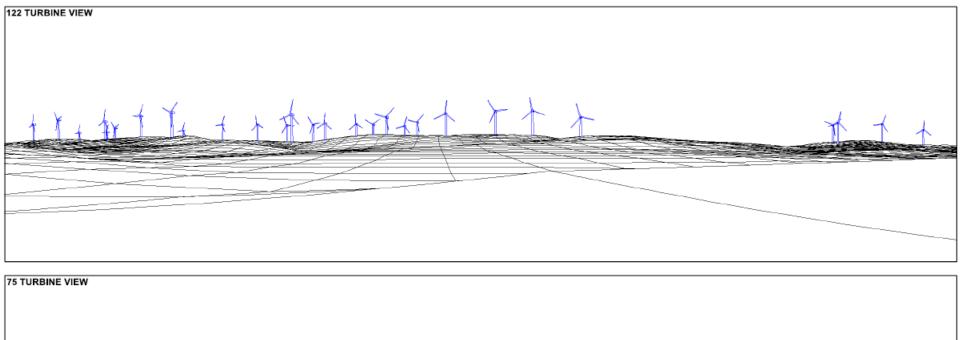




BANGO WIND FARM: BAN060 MONTALTA

Grid reference: 668961E 6166710N Viewpoint elevation: 608 m AHD Camera height: 2 m Turbine blade tip height: 200 m View direction: 70° Included angle: 140° Distance to nearest turbine: 2.7 km





BANGO WIND FARM: BAN144 LETONA (RIGHT VIEW)

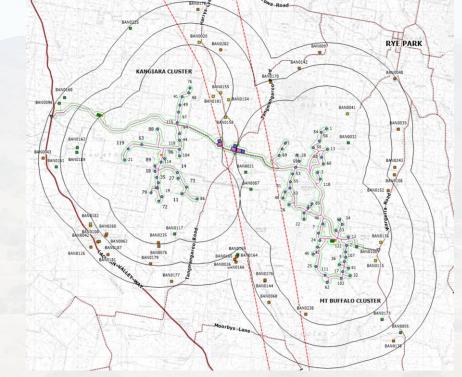
Grid reference: 668769E 6167707N Viewpoint elevation: 598 m AHD Camera height: 2 m

Turbine blade tip height: 200 m View direction: 95° Included angle: 105° Distance to nearest turbine: 2.5 km



• We have been working with this community for over 10 years

• We have listened





Conclusion

Conclusion



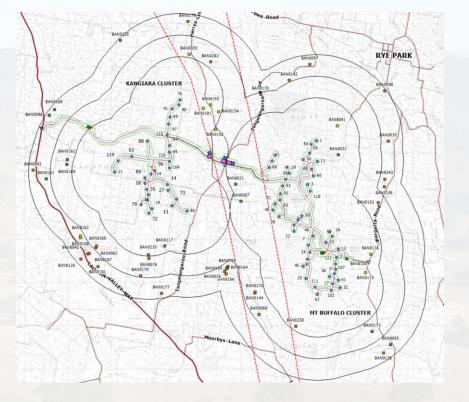
An unsolicited quote from a non-associated neighbour to the Project:

I feel that I am in a position to be judgmental because I am able to make a comparison. We have had to contend with the Bango project as well. The community consult that we have had from CWP Renewables, as much as I hate to say it, has been very good. We have had 3 or 4 visits to our home, phone calls, emails, and anything we ask for eg. photo montage of our property, diagrams etc, doesn't seem to be a problem.

Un-involved landowner, Rye Park Wind Farm PAC meeting, 2017

• We have been working with this community for over 10 years

- We have listened
- The Bango Wind Farm is a wellconsidered renewable energy generator for NSW
- We look forward to showing you around the site next week





Conclusion

CWP Renewables Pty Ltd Level 6, 45 Hunter Street, Newcastle, NSW, 2300 PO Box 1708, Newcastle, NSW, 2300 Tel: 02 4013 4640

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