Comments on Waterloo wind farm Compliance Testing at House 24

M Morris May 2015

These comments relate to wind farm noise compliance testing carried out at "House 24" which is approximately 2.49 km West of the nearest Waterloo wind farm turbine in the Mid North of South Australia.

The testing was carried out by Marshall Day Acoustics (MDA) on behalf of the wind farm operator TRUenergy soon after the wind farm commenced operation in late 2010.

A copy of TRUenergy's noise summary letter[1] sent to the residents of House 24 in October 2012 is provided in the following pages. I have added comments in red and purple to this copy of the document to highlight key points

Approval to develop the Waterloo wind farm was granted by the Clare and Gilbert Valleys Council (CGVC)[2] in 2005 and at the time the development was subject to the SA EPA wind farm noise guidelines 2003 (SA03)[3] which specified a noise limit of 35dB (A) for wind farm noise.

SA EPA wind farm noise guidelines 2009 (SA09) [4] succeeded the previous 2003 version of the noise guidelines. One main difference was that the noise limit for the Primary Production Zone was raised to 40dB(A). Presumably because it was realized that the Waterloo wind farm could not meet the SA03 35dB (A) limit.

Construction of the wind farm did not commence until 2009 and generation commenced in late 2010.

Examination of the following letter from TRUenergy's Steve Brown dated 8 October 2012 reveals that noise testing was carried out at House 24 during the period 25 November 2010 to 19 April 2011.

The TRUenergy letter arrived **2 years** after the wind farm began generating noise impacts which disturbed the residents and **18 months** after the noise monitoring equipment was removed from House 24.

Results provided by TRUenergy show that during the testing by Marshall Day acoustics **the wind farm noise level was below the SA09 noise limit only when the wind speed at wind turbine hub height was less than 10.5 metres per second.**

When the hub height wind speed was higher than 10.5 m/s, the noise level at House 24 exceeded the 40dB(A) limit and compliance was not achieved. Noting that producing the rated power of Vesta V90 3 MW turbines is only achieved at the much higher wind speed of 18 m/s. A much greater speed than 10.5 m/s.

SA09 specifies that the noise level *"should not exceed ……40dB (A) at all relevant receivers for wind speed from cut-in to rated power of the WTG and each integer wind speed in between"* [4]

CONCLUSIONS

The Waterloo wind farm operators have been in no hurry to communicate noise testing results to impacted residents who have made complaints.

MDA data shows that in 2010/2011 Waterloo wind farm did not comply with the SA 2009 limit of 40dB (A) when wind speeds at hub height were more than 10.5 m/s

MDA have deemed this wind farm to be compliant at House 24 despite their data contradicting this conclusion.

MDA data shows that in 2010/2011 the Waterloo wind farm could not have complied with the SA 2003 limit of 35 dB (A) when the wind speed at hub height was more than 6.5 m/s. Note that Development Approval for Waterloo wind farm was given under the lower SA03 limit and later (2009) adjusted to the higher noise limit.

The SA EPA has allowed the noise limit for the Waterloo wind farm to be relaxed to allow levels of noise that would not be compliant in other Australian States, presumably because the development could not comply with the original conditions of its approval.

The SA EPA have allowed this wind farm to continue to operate despite the fact that noise levels at House 24 do not comply even with the existing guidelines, let alone stricter 2003 guidelines under which the wind farm was originally given development approval.

[1] Letter to Waterloo resident from Steve Brown, TRUenergy, October 2012 [2] Waterloo wind farm Development Approval 2005 Clare and Gilbert Valleys Council DAP [3] SA EPA 2003, *Wind farms environmental noise guidelines,* SA EPA, Adelaide [4] SA EPA 2009, *Wind farms environmental noise guidelines,* SA EPA, Adelaide

EnergyAustralia

EnergyAustralia Waterloo Wind Farm Pty Ltd
ABN 87 113 160 731

Lot 91 Schutz Rd
Waterloo South Australia 5413
PO Box 702
Clare South Australia 5453

Phone +61 8 8840 4854
Facsimile +61 8 8840 4800

enq@energyaustralia.com.au
energyaustralia.com.au

8 October 2012

[redacted]

Dear Mrs Quast,

TRUenergy Waterloo Wind Farm
Post-Construction Noise Monitoring Result Summary

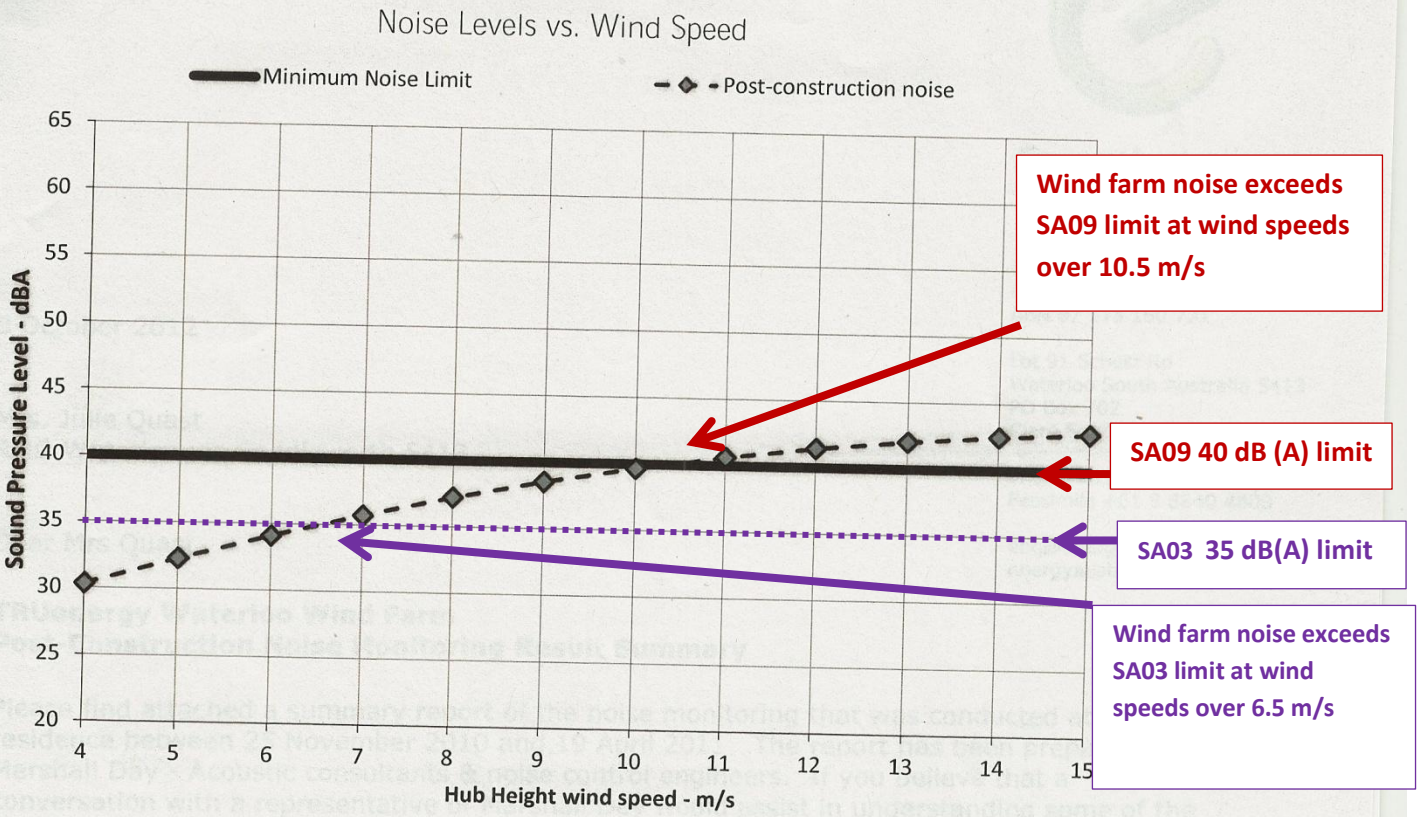
Please find attached a summary report of the noise monitoring that was conducted at your residence between 25 November 2010 and 19 April 2011. The report has been prepared by Marshall Day - Acoustic consultants & noise control engineers. If you believe that a conversation with a representative of Marshall Day would assist in understanding some of the detail in the report I would be pleased to make the necessary arrangements.

I take this opportunity to apologise for the time that has passed between the noise monitoring and the provision of this information.

Yours sincerely

[redacted]

Manager, Asset Services
Operations & Construction
EnergyAustralia


Noise Levels vs. Wind Speed
Minimum Noise Limit
Post-construction noise
Sound Pressure Level - dBA
65
60
55
50
45
40
35
30
25
20
4
5
6
7
8
9
10
11
12
13
14
15
Hub Height wind speed - m/s
Wind farm noise exceeds SA09 limit at wind speeds over 10.5 m/s
SA09 40 dB (A) limit
SA03 35 dB(A) limit
Wind farm noise exceeds SA03 limit at wind speeds over 6.5 m/s

POST-CONSTRUCTION NOISE MONITORING RESULT SUMMARY

Waterloo Wind Farm

House reference 24
Resident Name: [redacted]
Stakeholder: No
Nearest Turbine: BH

Relevant Standard: SA EPA Guidelines 2009
Period: 25 November 2011 to 19 April 2011

Distance to Nearest Turbine (m): 2,493
Worst case Wind Direction: 53-143°

Noise monitoring periods	Easting	Northing	Make	Model	Serial Nb.
25.11.10 – 07.12.10	305,077	6,239,818	ARL	316	16-306-029
25.02.11 – 20.03.11	305,077	6,239,818	ARL	316	16-306-030
25.03.11 – 05.04.11	305,077	6,239,818	ARL	316	16-306-031
08.04.11 – 19.04.11	305,077	6,239,818	ARL	317	16-306-032

Total number of valid data points collected	7,617
Number of data points used for analysis (worst case wind direction)	3,775
Wind speed range used for analysis (worst case wind direction)	3.5 to 17.7m/s
Post-construction regression line of best fit R^2	0.19

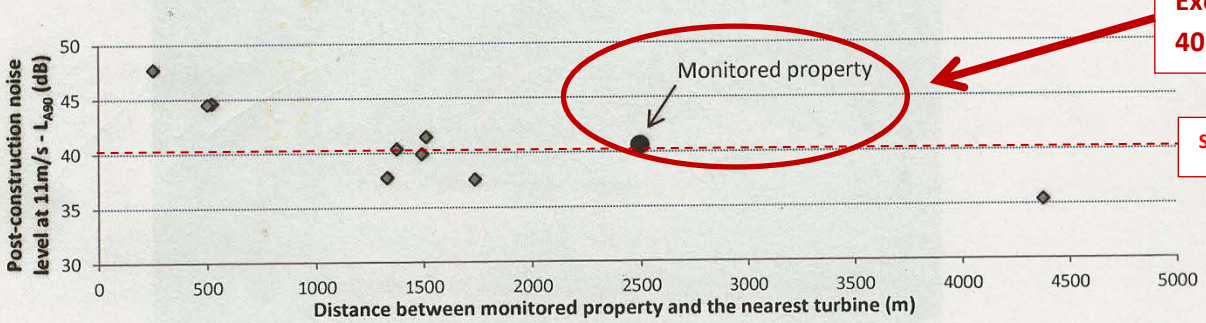
Wind Speed	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Noise Limit	40	40	40	40	40	40	40	40	40	40	40	40
Post-construction noise	30.3	32.3	34	36	37	39	40	41	41	42	42	43
Derived wind farm noise	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	-	-	-	-

Exceeding 40dB(A) limit

Compliance with the SA EPA Guidelines 2009 achieved? Yes (See comments) ?

Presence of tonality+? No Presence of annoying characteristics+? No

+ based on subjective assessment by a qualified acoustic consultant



General Comments

Wind farm noise levels could not be derived at this property due to the lack of pre-construction backround noise levels. Further investigations by MDA and the South Australian EPA demonstrated that post-construction levels were highly affected by background noise levels and that compliance with the SA Guidelines was deemed to be achieved.

Comments from Relevant Authority

Conclusions accepted ☐ Further assessment required ☐