

Hills of Gold Wind Farm: SSD 9679

Submission by Brenda Gerrie

Thank you for the opportunity to make a submission opposing the Hills of Gold Wind Farm. I oppose this wind farm because it will turn a picturesque rural area into an industrial scape with little or no opportunity to ameliorate its impacts on most of the people who live there and put at risk significant fauna and flora.

Proposed Project Area

The proposed wind farm overlooks the Peel Valley, a beautiful rural landscape on the Liverpool Range metaphorically known as the Hills of Gold referring to the gold mining history of the area and the golden glow of the setting sun on the majestic hills towering up to 600m above the valley floor.

The area attracts plenty of tourists with the heritage village of Nundle being a jump-off point to a diversity of tourism destinations around the area, not least of which are places like Hanging Rock, historic gold mines, 4WD tours, wedding and music festival venues which attract visitors with heritage and cultural interests, those seeking wilderness experiences or simply the ambience of a beautiful landscape. All these tourist destinations will have panoramic views of the wind farm.

The turbines follow a sweeping U-shaped ridgeline atop the Hills of Gold and connecting Ben Halls Gap Nature Reserve with Crawney Pass National Park to create a virtual amphitheatre of turbines surrounding the Peel Valley on 3 sides.

Impacts on people

The National Wind Farm Commissioner says that locating turbines on ridgelines can have a high impact on visual amenity, they may cause noise and shadow flicker for residents in the valley as well as other dislocating impacts on the community that are best avoided. He notes that steep and winding access roads can also be obtrusive and significantly damage and constrain the remaining farmland in the area (based on complaints to the NWFC). Mr Dyer could have been describing the proposed Hills of Gold Wind Farm and the impending impacts of turbines located on ridgelines and the steep access roads needed to get them there.

By disregarding the cumulative impacts of multiple turbines, the assessment of visual impact in the EIS is perfunctory and underplays the true impacts. The bar charts provided in Appendix 1 identify which dwellings are most impacted by multiple turbines and which turbines are the cause.

Bar Chart 1 identifies 22 non-associated dwellings (almost one third of the community in the vicinity) which are likely to experience HIGH visual impact because they live within 3100m of turbines. The 3 worst affected dwellings are NAD_67, NAD_5 and NAD_10a which have 17, 11 and 10 turbines respectively within 3100m. NAD_67 on Morrisons Gap Road has an eye level panoramic view of turbines across 4 60° sectors, the closest turbine being 1422m away. NAD_5 is down in the valley at the end of Nundle Creek Road some 400-500m below the ridgeline with 180° views of 30 or more turbines, the closest being 1795m away. The EIS asserts that vegetation screening would reduce views of towering turbines. This is highly unlikely. NAD_10a is also on Nundle Creek Road where vegetation screening might reduce their views of the valley, but not of turbines 500m above them.

By advocating screen planting as a possible solution and using this to reduce the VI ratings, the EIS overplays the effectiveness of vegetation screening to reduce impacts.

Bar Chart 2 identifies the 25 HIGH impact turbines which are closer than 3100m to non-associated dwellings. They are WP19, WP23, WP24 at the southern extremity of the wind farm and turbines WP49 to WP70 in the northern section.

There is nothing in the EIS which justifies placing 25 turbines so close to one third of the non-associated dwellings.

Bar charts 3 and 4 identify the 42 dwellings and 55 turbines within the MEDIUM visual impact zone from 3100m to 4550m. And again, there is nothing in the EIS to justify placing most of the turbines so close to over one half of the non-associated dwellings.

Taken together there are 57 turbines within 4550m of 42 non-associated dwellings. This is unacceptable and is at odds with the spirit of the Guidelines and the Visual Assessment Bulletin. Turbines closer than 3100m are to be avoided or requires careful consideration and justification for placing turbines within the threshold distances for HIGH/MEDIUM visual impact.

The visual impacts are likely to be even greater because the turbines themselves are so close together. There are 13 turbines which are less than 2 rotor diameters from a neighbouring turbine, 54 turbines within 3R of another and 65 turbines within 4R of another.

Bar Chart 5 identifies 54 turbines with a separation distance of less than 3 rotor diameters (calculated using turbine GPS coordinates) and counts the number of instances where that separation distance occurs for each turbine. Roughly 50% Of these turbines have more than one other closer than 3R in little clusters throughout the wind farm.

Bar chart 6 identifies the turbines 5R apart. All but 1 turbine (WP19) has 1 or more turbines within 5R. Turbines WP4, WP25, WP26, WP30, WP33, WP34 to WP38, WP61, WP64, WP66 and WP67 are the most notable with 5 or more turbines within 5R.

If not bad wind farm design, then this illustrates the proponent's intention to fit as many turbines as possible in the space with little consideration given to the impact.

The southern edge of the wind farm has 17 turbines (WP20 to WP36) clustered in 3 overlapping fingers to create multiple layers of turbine blades spinning at different angles and speeds. Many of these turbines have a separation distance of less than 3R (refer to Table 1 in Appendix 1). This cluttering effect will increase the visual impacts even more and increase noise levels.

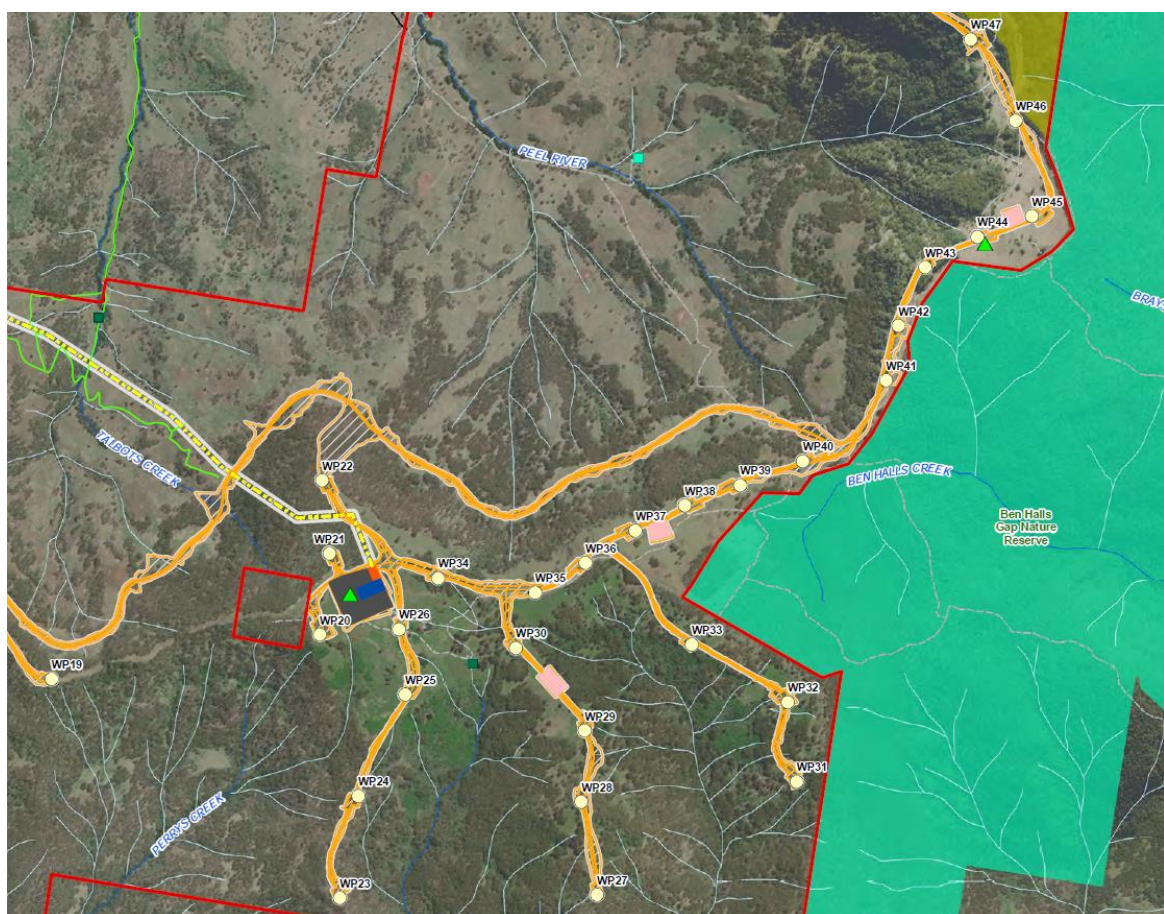
In summary, the turbines will dominate the landscape for many kilometres, despoil the visual amenity of a beautiful valley and highly impact the community who live there and will be at odds with the tourist activities. By placing turbines too close to too many people the Guidelines have not been followed, the extent and magnitude of visual impact is understated whilst the effectiveness of vegetation screening is overstated and used to down grade VI ratings without justification.

Impacts on the environment

Notwithstanding the importance of renewable energy to our environment, this wind farm will share a border with high quality habitat known to be home to significant flora and fauna. Ben Halls Gap Nature Reserve has a rich bird and mammal population the majority of which are hollow tree dwellers. The Reserve is the head waters of three different rivers systems and has an important role in contributing clean waters to three different catchments. Ben Halls Gap is a strict nature reserve of important scientific value to which access is limited and it is listed on the Register of the National Estate (Ben Halls Gap National Park Plan of Management 2002).

And yet this proposed wind farm puts 13 turbines within 100m of the Reserve's boundary with an average separation distance of 3 rotor diameters between them, some being as close as 1.9R. The turbine GPS coordinates at ground level were used to calculate the separation distances, so this means that the spinning blades are 1R (170m) closer to each other. And so, turbines 1.9R apart are 153m apart at the level of spinning blades.

But the southern end of the Reserve is also where the cluttering effect is at its worst with 17 turbines in 3 overlapping fingers. This creates a wall of overlapping turbines – as many turbines as will fit on that narrow section of ridgeline – forming a dangerous and possibly impenetrable barrier for the raptors who live in the Nature Reserve and hunt in the valleys and farmland below. The following image taken from page 73 of the EIS shows the cluttering effect and the turbines adjoining the Reserve.



In summary, there are 27 turbines impacting Ben Halls Gap Nature Reserve and as Table 1 in Appendix 1 illustrates, 16 of these turbines are closer than 3R to another turbine. This will form a barrier to the movement of birds and bats in and out of the Reserve. And this part of the range is so narrow that there is little or no opportunity to relocate turbines to reduce their impact.

Crawney National Park on the western side of the wind farm also has a cluster of turbines within 1km or so of the park boundary. The closest of these are a cluster of 6 turbines WP9 to WP14 with a separation distance of 100m to 120m at blade height.

Net effect of 70 turbines

The cumulative effects of 230m tall turbines cluttered so close together and so close to people is considerable and has not been adequately factored into the environmental impact assessment.

Nor does the EIS consider the combined effects of closely arranged turbines on shadow flicker or noise. The potential for shadow flicker, excessive noise and disruption and dislocation of a community who live and work in the valley and surrounds must be carefully considered when assessing this wind farm.

The combined impact of turbines unusually close together adjoining Ben Halls Gap Nature Reserve on the movement of birds and bats between the Reserve and its surrounds must also be considered as well as the impact of the funnelling effect of the U-shaped southern end of the wind farm on birds and bats. Flight paths between the two parks through and between the various turbine clusters must also be assessed.

Never mind the unresolved engineering feats needed to navigate turbines through Nundle, up steep and winding roads on either side of the valley, the additional visual scarring to create new roads on steep hillsides as well as the consequential risk to water quality.

This is no place for a wind farm. Far better, as the National Wind Farm Commissioner suggests, to locate wind farms on large holdings away from neighbours and towns.

In Summary

There could not be a more inappropriate site for an intrusive wind farm. Turbines on ridgelines - as many as can fit into the space – an amphitheatre surrounding the Peel Valley on 3 sides where people live and work. Turbines so close together that the cluttering effect of layers of turbine blades spinning at different angles and speeds will create an unusually high visual impact for many people and put birds and bats at risk.

Please note that the data I have compiled does not take account of 11th hour benefit sharing agreements which change the status of those dwellings but not the impacts of this wind farm,

The Peel Valley and the Hills of Gold are an inappropriate place for a wind farm. This wind farm is too close to too many people and significant natural resources and must be refused.

End Note

I live in southern NSW and I am a strong advocate for renewable energy. I have no vested interest in this wind farm one way or another. However, I have visited the Nundle area often and know it well. This wind farm will have a high visual impact on the community and destroy many of the features which attract visitors to the area.

I also object to the name Hills of Gold Wind Farm. It is identity theft.

Brenda Gerrie

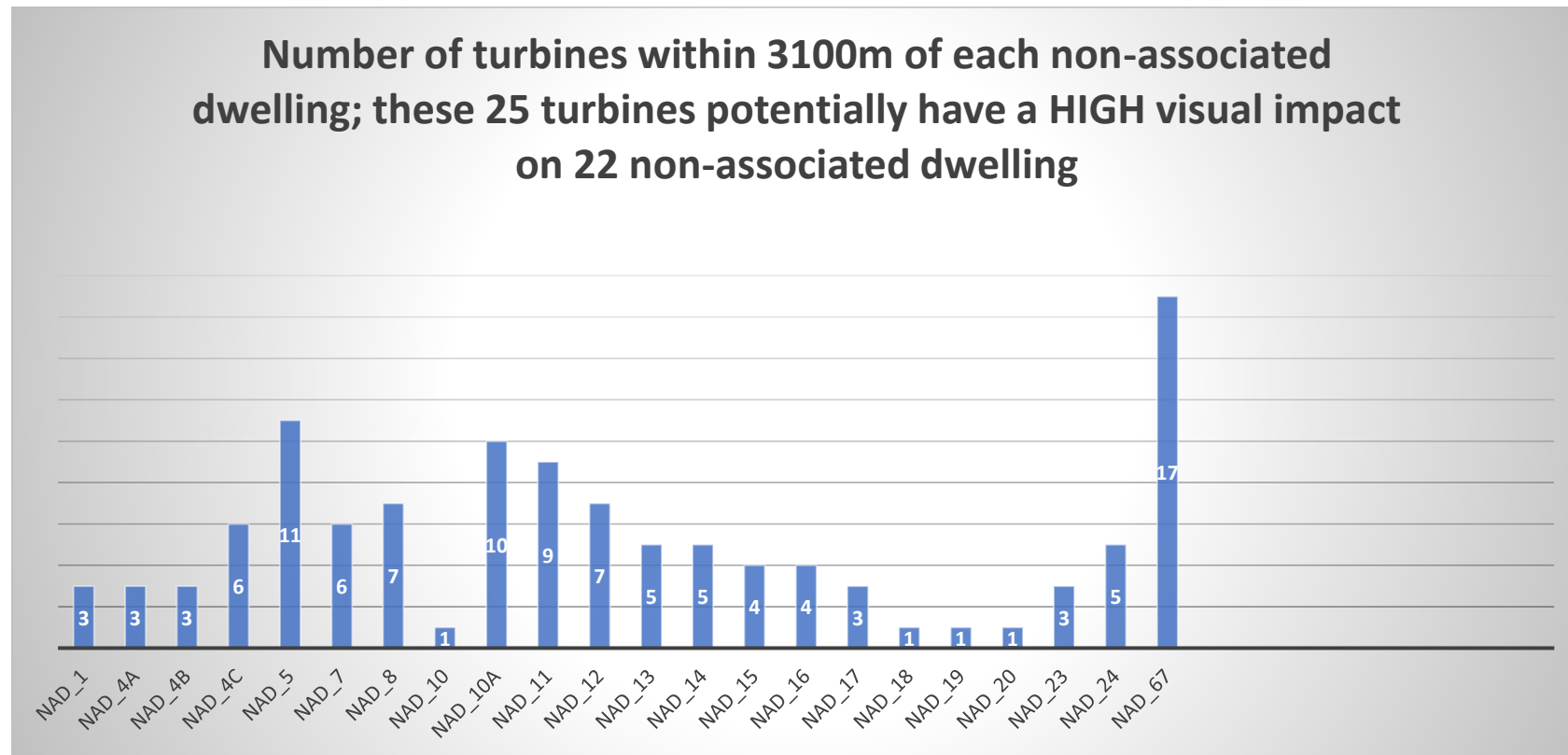
Captains Flat, NSW

January 2021

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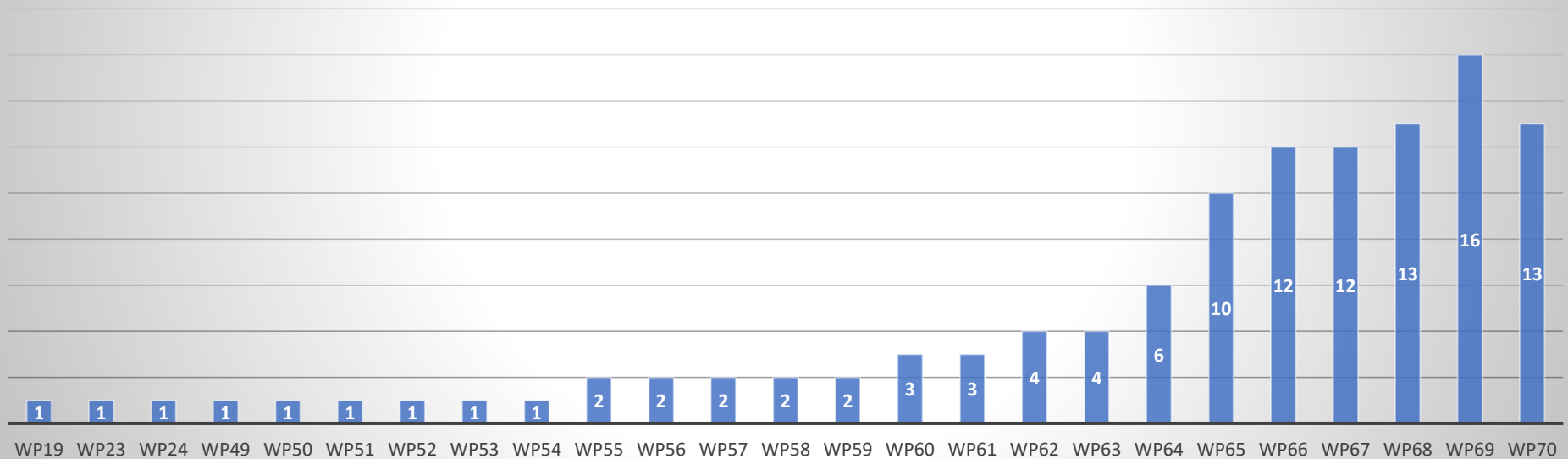
Appendix 1

The dwelling and turbine coordinates provided in the EIS were used to calculate the line-of-sight distance and bearing direction of EVERY turbine from the surrounding dwellings and from each other. This data was used to generate 4 bar charts within 4550m, the HIGH/MEDIUM visual impact zones for turbines 230m tall. Bar charts 5 and 6 count the number of turbines within a separation distance of 3R and 5R for each turbine. None of this information is provided in the EIS and provides a better understanding of the true visual impact on non-associated dwellings and the cluttering effects of turbines sited too close together.



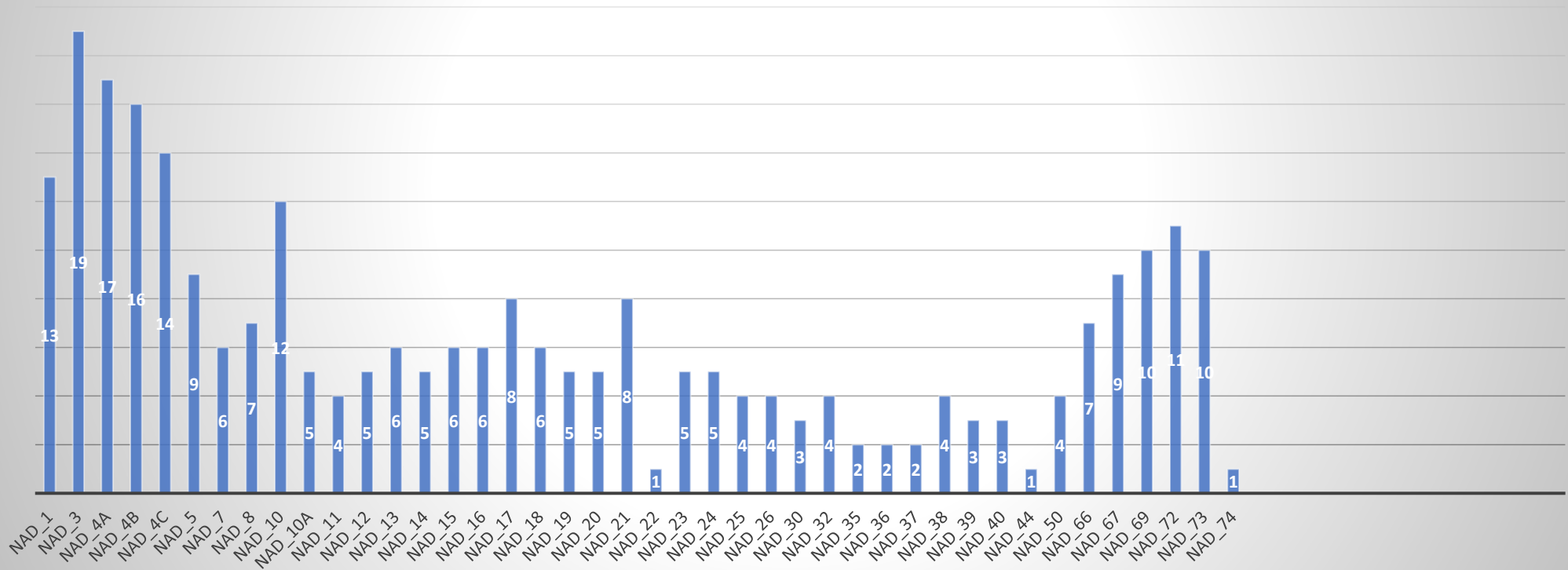
Bar Chart 1

Number of non-associated dwellings within 3100m of each turbine; these 25 turbines potentially have a HIGH visual impact on 22 non-associated dwelling



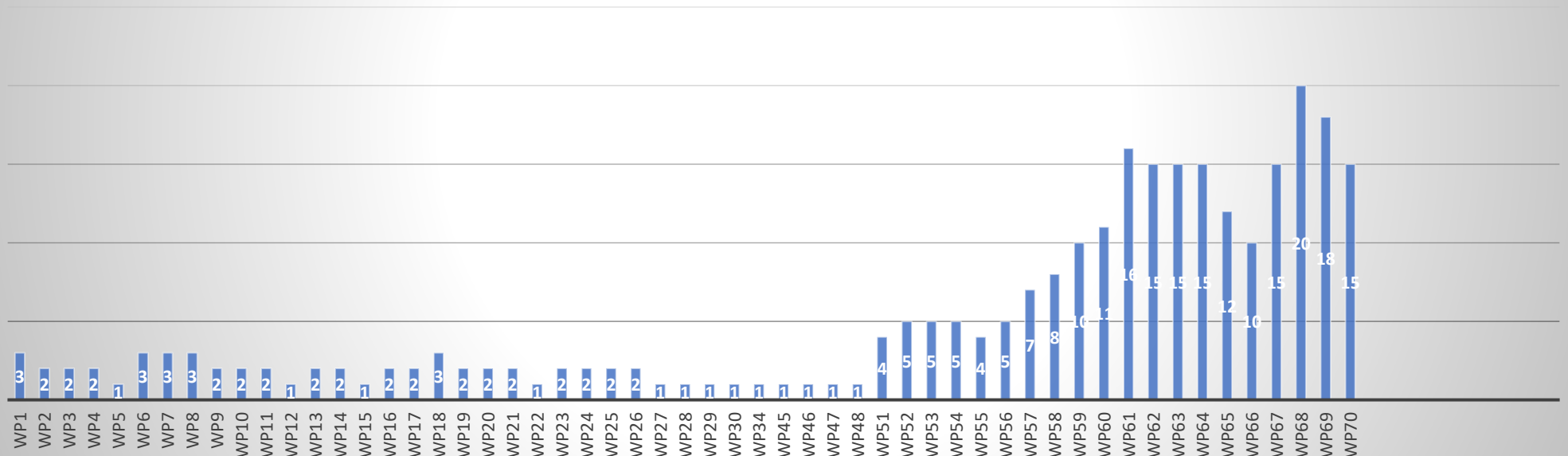
Bar Chart 2

Number of turbines between 3100m and 4550m of each non-associated dwelling; these 55 turbines potentially have a MEDIUM visual impact on 42 non-associated dwelling



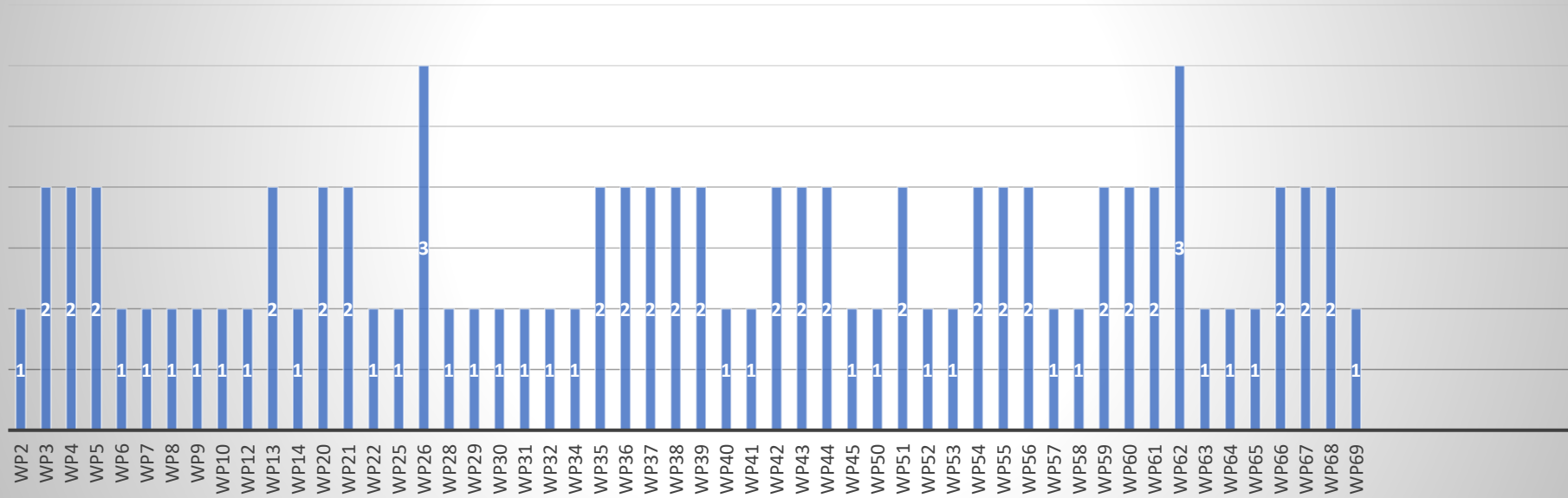
Bar Chart 3

Number of non-associated dwellings between 3100m and 4550m of each turbine; these 55 turbines potentially have a MEDIUM visual impact on 42 non-associated dwelling



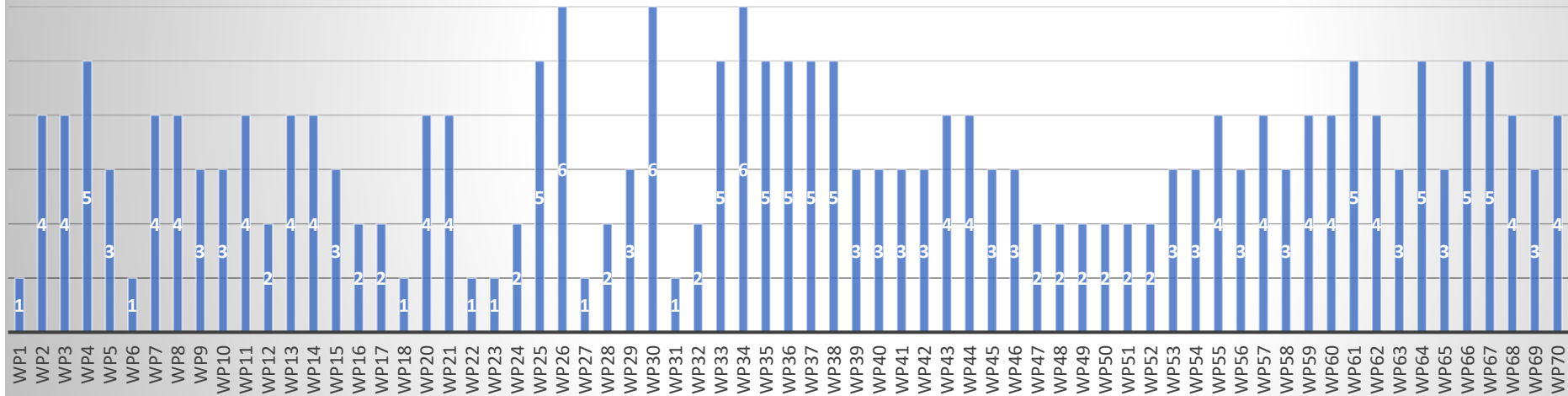
Bar Chart 4

Count of turbines within 3R of each turbine
54 turbines have one or more turbines within 3R



Bar Chart 5

Number of turbines within a separation distance of 5R to each other; there are 69 turbines and chart peaks clearly shows the cluttering effect of turbines stacked together



Bar Chart 6

Turbine 1	Turbine 2	Separation (m)	R	Bearing
WP20	WP26	464	2.7	86° NE
WP20	WP21	477	2.8	7° NE
WP21	WP22	428	2.5	6° NW
WP25	WP26	383	2.3	5° NW
WP26	WP34	376	2.2	37° NE
WP28	WP29	415	2.4	3° NE
WP30	WP35	342	2	19° NE
WP31	WP32	467	2.7	7° NW
WP35	WP36	341	2	59° NE
WP36	WP37	348	2	57° NE
WP37	WP38	325	1.9	63° NE
WP38	WP39	346	2	70° NE
WP40	WP39	392	2.3	69° SW
WP41	WP42	327	1.9	13° NE
WP42	WP43	376	2.2	25° NE
WP43	WP44	353	2.1	60° NE
WP44	WP45	341	2	69° NE

Table 1: Turbines in proximity to Ben Halls Gap NR
with separation distances less than 3R