

6 VISUAL IMPACTS

Director-General's Requirements - the EA must:

1. provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project. This should describe community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project based on surveys and consultation;
2. assess the impact of shadow “flicker”, blade “glint” and night lighting from the wind farm;
3. identify the zone of visual influence (no less than 10 kilometres) and assess the visual impact of all project components on this landscape, including in the context of the visual influence of the existing Blayney Wind Farm;
4. include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures;
5. provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented.

6.1 SUMMARY OF OBJECTIONS

Visual Impact: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

- 6.1.1 The wind turbines will dominate, scar and industrialise the landscape.
- 6.1.2 The wind turbines will degrade the scenic qualities of the rural landscape in which residents have chosen to live, completely altering the visual environment and alienating residents whose rights to the quiet enjoyment of their property have been usurped.
- 6.1.3 There will be cumulative visual effects both locally and within the shire where Blayney Wind Farm, Cadia Valley Operations (Newcrest Mining), and other projected wind farms and mines will effectively create a massive industrial rural landscape.

6.1.4 The report on flicker produced by Parsons Brinckerhoff Australia inadequately predicts the effects of flicker on affected residences and does not address the possible effects on people/children with epilepsy or autism.

6.1.5 The substation is poorly located and visually impacts at least one residence.

6.2 BACKGROUND INFORMATION

6.2.1 The proposed Flyers Creek Wind Farm is situated at the north western end of Blayney Shire. The Blayney Shire Council website describes Blayney and the surrounding district as “located in the Central Tablelands of New South Wales, some three and half hours by road from the centre of Sydney. It is the centre of a **closely settled and populous district**, which stretches east to Bathurst, southwest to Cowra and north to Orange. Blayney is a comfortable 25 minutes drive to Bathurst - population 33,000 and to Orange - population 34,000.”

6.2.2 The website also quotes demographic studies stating that the population increasing especially in the northern part of the shire. **These very facts provide a strong argument for the inappropriateness of the 44 wind turbine industrial complex within the boundaries of a well populated area.**

6.2.3 **The FCWF Environmental Assessment fails to take into account these demographic figures and to address the increasing population growth predicted for the Blayney Shire.**

6.2.4 Maps and charts submitted with this EA are inaccurate, contain missing data and have important data obliterated or impossible to read.

6.3 LANDSCAPE CHARACTERISATION

6.3.1 Blayney Shire lies in the Central Tablelands of New South Wales. This tablelands region, 200-350 kilometres west of Sydney and a similar distance north of Canberra in the Australian Capital Territory, is important because of its proximity to major population centres and because of its agricultural production. It comprises several plateaux with some areas higher than 1200 metres, the highest being Mt. Canobolas at 1,398 metres (northwest of the FCWF project) and Mt. Macquarie at 1,203 metres (to the east).

6.3.2 The Central Tablelands is considered to have one of the most equitable of Australian climates and this, together with the picturesque undulating to quite mountainous landscape, makes it an attractive destination to both residents and travellers. The

main river in the Blayney district is the Belubula River, a tributary of the Lachlan River. Because of the extremely hilly countryside with deep valleys there are also several significant creeks which within the FCWF area include: Flyers Creek, Cowriga Creek, Slattery's Creek, Gooleys Creek, Kangaroo Flat Creek, Cheesemans Creek, Taylors Creek and many ephemeral gully watercourses.

- 6.3.3 The Central Tablelands is renowned as a beautiful, charismatic, tranquil and desirable area and the Flyers Creek district exemplifies this. It's proximity in particular to Orange now makes it easily accessible. This is hardly the landscape for rural industrialisation. The number of local residents affected adversely by the imposition of industrial wind turbines within their "home space" far outnumbers the host families who seek to benefit to the non hosts' detriment.

6.4 BLADE FLICKER

- 6.4.1 The reporting company, Parsons Brinckerhoff Australia Pty Ltd (PB Australia) is an Australian company (Melbourne office) which Infigen (through Aurecon) employed as an independent company and which is solely working from Infigen information and maps.
- 6.4.2 PB Australia has not accessed the area and takes no responsibility for any third party who may use or rely on its document for information. This immediately brings into question its reliability.
- 6.4.3 As with the Noise report, PB Australia are using an "indicative" turbine for its measurements as the final size of the turbine to be used at Flyers Creek is **still to be disclosed**. Consequently any change in the blade length, thickness and speed of rotation will significantly alter these outcomes.
- 6.4.4 **Measurements in this report only pertain to the shadow travelling over a window or skylight on a sample building of 10m wide x 2m high and 1.5m off the ground. No consideration is taken for flicker over outside living areas, gardens, work sheds etc. Nor does this rectangle realistically represent many of the residences in the development area.**
- 6.4.5 Sunlight and cloud formation for this report has been obtained from the Bureau of Meteorology for Richmond Airport and Canberra Airport. Both of these are in excess of 200 km away. However, as they have deemed Canberra to be "geographically similar" with our area, they have based their measurement for this report on Canberra data.

- 6.4.6 The map provided by PB Australia is particularly hard to read because of white boxes and black lettering which obliterate much of the information underneath. A map has been requested from PB Australia, without boxes and lettering. PB Australia was only willing to provide the map with Infigen's permission, which has only recently been forthcoming (Figure 6.1) . This goes towards **poor community consultation and transparency or worse**.
- 6.4.7 Infigen (via Aurecon) supplied the maps to PB Australia. As the turbine numbers appear to be **incorrect** there is a concern that other information regarding the number and placement of houses may also contain errors.
- 6.4.8 Flyers Creek Wind Turbine Awareness Group has ground-truthed the number and location of residences and has found **additional residences** not notated on the maps.
- 6.4.9 PB Australia found 25 residences that would be affected by flicker. The "cut-off" points seem to be 30 shadow flicker hours per year for the "worst case" scenario and 10 shadow flicker hours per year for the "realistic" scenario. The statement is made: "No residence experienced more than 10 hours of shadow flicker in the realistic case including residence involved in the wind farm project. For the worst case, no neighbouring residences will experience over 30 hours of shadow flicker per year."
- 6.4.10 In Table 1 of PB Australia's report 3 residences out of the 25 experience worst case shadow flicker hours per year of greater than 30. Four residences experience realistic shadow flicker hours per year at the top end of the scale, with 4 being greater than 8 (two of these being greater than 9). From the flicker map reproduced here (Figure 6.1), it is apparent that a wide area of the proposed wind farm is going to be impacted by shadow flicker, and by extension blade glint.
- 6.4.11 In relation to the effect of flicker on epilepsy and autism, this is covered in the section on Health. Suffice to say, autistic children are extremely sensitive to the noise and flicker of wind turbines. There are two autistic children known in our community who are likely to be severely impacted.
- 6.4.12 The proportion of patients affected by viewing wind turbines expressed as distance in multiples of the hub height of the turbine has been shown that seizure risk does not decrease significantly until the distance exceeds 100 times the hub height. Hub height of the representative wind turbine is 100 metres. **This would make the distance 10.0 kilometres for susceptible individuals which is at considerable variance to PB Australia's assertion of 1 km.** Moreover, there would be a cumulative effect from blade flicker at these distances²⁰.

- 6.4.13 Since risk does not diminish with viewing distance, flash frequency is therefore the critical factor and should be kept to a maximum of three per second, i.e. sixty revolutions per minute for a three-bladed turbine. On wind farms the shadows cast by one turbine on another should not be viewable by the public if the cumulative flash rate exceeds three per second.

6.5 VISUAL INFLUENCE

- 6.5.1 Visual impact of a wind turbine development is a major consideration. While distance and scale of the landscape can produce different perceptions of the impact on the landscape the human eye is often drawn to ‘artificial’ vertical features, regardless of distance, making them seem bigger. This is something that cannot be reproduced in a photomontage especially when a wide angle lens is used where the superimposed wind turbines will seem more distant, particularly in the centre of the picture. The photomontages give a sense of turbines that have been “faded out” and therefore we feel are not a true representation of the final visual impact.

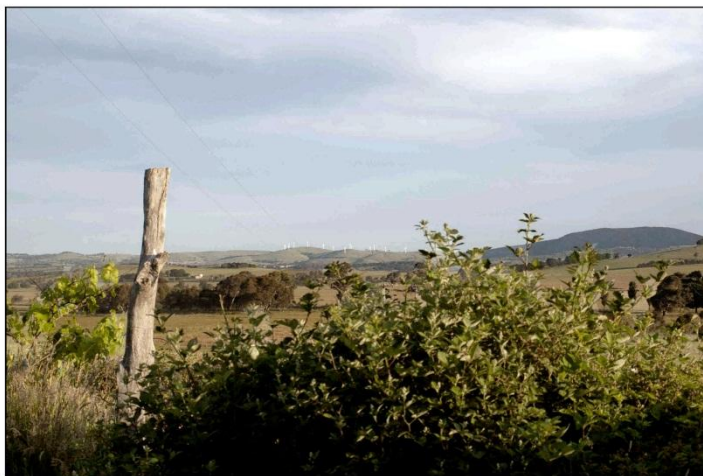


Image 1 : Shot taken from Willowdale toward the existing turbines at Carcoar. These turbines are 67 meters high and 12 - 15 kilometers away and are clearly visible. (This shot is slightly to the left of the EA shot below)

Image 2: View of same area in infigen's EA. These turbines are 150 meters high and the closest of them are 1.3 to 1.8 kilometers away yet we can hardly see them.



Figure 6.1: Comparison of Blayney Wind Farm turbines and a photomontage of wind turbines proposed for Flyers Creek Wind Farm

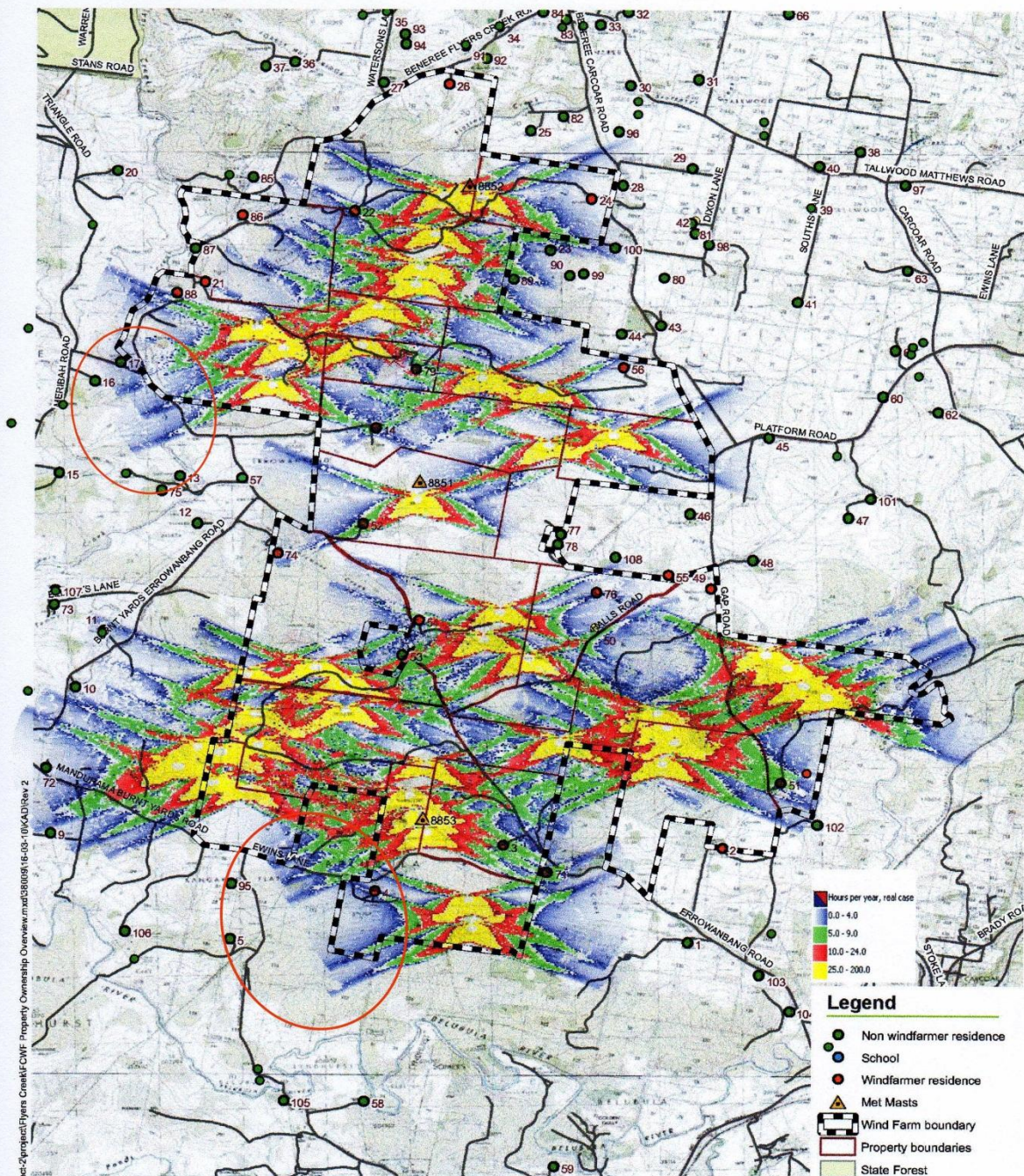
- 6.5.2 The EA states: “Development of the wind farm will introduce large wind turbine structures to the generally rural landscape that will be a new noticeable element in the existing scenes. However, operation of the Blayney Wind Farm in the district for ten years will reduce the sense of novelty and change of the Flyers Creek project, even though the Flyers Creek project is considerably larger.” Further the EA describes Blayney Wind Farm as being well accepted by the community. This is anecdotal evidence only and has never been tested. There is also significant anecdotal evidence to support the contention that residents are distressed at the prospect of 44 turbines of 150 metres compared to 15 turbines of 67 metres.
- 6.5.3 In addition, there is the cumulative effect of a 293% increase in the number of turbines within a small area. Blayney Wind Farm is only 8 kilometres from the proposed Flyers Creek Wind Farm.
- 6.5.4 The wind turbines are 150 metres high. They will be sited along ridgelines. Viewing the turbines from a valley floor, for instance, as will be the case from a significant number of residences, will increase the height impact. For instance Errowanbang School is sited in a valley where 33 turbines will be visible to a greater or lesser extent, the impact of which will only be ameliorated by vegetation screening.
- 6.5.5 Issue is taken about the creation of “visibility indices” which rely heavily on the presence, or proposed planting of, vegetation screening. Vegetation, if new planted, takes a significant number of years to grow to a height where it may influence turbine visibility; vegetation already in existence is subject to the vagaries of nature (drought, tree fall – a significant factor, and other influences) that can result in the removal or modification of vegetative screening. In other words, the inclusion of vegetative screening into the modelling for visibility is an anathema and does not translate to ground truthing over time.
- 6.5.6 In support of this statement the EA (Chapter 9) accepts that: “Due to their size and required position on the top of ridges, the wind turbines will be prominent and **difficult** to screen at the site.” Difficult in reality is impossible.
- 6.5.7 Photographs taken to represent the landscape in Chapter 9 are only partially representative of the area:
- The view **east** of Carcoar towards Mount Macquarie is not pertinent – the development will be to the west. A more appropriate view would be above Carcoar along the Mount Macquarie Road. Mount Macquarie rises to over 1000 metres and residents above Carcoar and towards the mountain will have widespread views of

almost the entire Flyers Creek Wind Farm (depending on altitude). The visual impact will be significant. This photograph is irrelevant and deceptive.

- There are no photographs incorporating Blayney Wind Farm, nor are they indicated in Figure 9.1. In Figure 9.1 the 15 turbines are sited between the 7.5 -10 km bandwidth to the east and south east between Carcoar Dam and Mount Macquarie. The inclusion of wind turbines in Figure 9.1 would amply demonstrate the cumulative impact of the two wind farms (Blayney Wind Farm and the proposed Flyers Creek Wind Farm). This again indicates the highly restrictive nature of the selected photographs.
- There is no view that includes the significant number of residences to the north of the development. An appraisal of the Figure 9.1 clearly indicates the residential density in that area.
- Few photographs are taken from the valley floors.
- The photographs seem to be chosen to exclude residences within the development area, giving the false impression that this rural area is sparsely populated which it is not.

6.6 SUB STATION

- 6.6.1 There are no photographs which accurately locate the position of the sub station, 120x80 metres in area.
- 6.6.2 According to the development plan of wind turbine sites the sub station will be **about “500 metres”** from one residence. This has been measured by the closest resident as **300 metres**. This resident also has two turbines sited approximately 1.5 km distant.
- 6.6.3 The EA states the substation will be “About 120 by 80 metres with a number of small buildings, height of structures mostly less than 10 metres but with busbars and supporting structures up to 25 metres high”. The suggestion is that trees should be planted around the substation to screen it. There are already some radiata pines between the residence and the site which are mature and in decline (some dead). It would take many years for new vegetation to grow to a height of 25 metres or more to provide adequate screening.
- 6.6.4 This resident (#87) is significantly impacted not only visually but from noise and issues relating to the electro-magnetic field.



* Oval areas show where the blue shadow ends abruptly (appears to have been cropped.)

Figure 6.2: Map showing flicker effects on the Flyers Creek Wind Farm, with white labelling removed. As a consequence the flicker patterns are more legible. Query the cropped areas as indicated above.