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17th January 2021

INDALO
PRIVATE GAME RESERVE ASSOCIATION
EASTERN CAPE | SOUTH AFRICA

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Re: Review of findings of Environmental Noise Impact Assessment of Proposed Albany Wind Energy Facility Conducted By Enviro Acoustic Research.

1. Introduction

1.1 The following report was commissioned at the request of Theo Fischer of EScience Associates (Pty) Ltd on behalf of Indalo Chairman of Indalo PGRA and .

1.2 This report has been written to document the review of the Noise Impact Assessment conducted by Enviro Acoustic Research (EAR)", compiled as specialist report as part of the EIR dated March 2020 and submitted for public comment in April 2020 as part of Environmental Impact Assessment application Albany Wind Farm Near Port Elizabeth, Eastern Cape Province (DEFF Reference Number: 14/12/16/3/3/2/1131) henceforth referred to as the Albany NIA.

1.3 The Albany Wind Energy (WEF) is proposed to be located on a number of farms situated near Makhanda / Grahams town in the Eastern Cape and according page 1 of the Albany NIA is proposed to host " 66 turbines, each capable of generating up to 4.5 Mega Watts (MW) of power" and thus up to 297 Megawatts (MW) installed capacity and further described in page 2 of the Albany NIA as: "Up to 66 wind turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 85 m". Also the Albany NIA page 106 states that "This study used the noise emission characteristics of the Vestas V136 3.45MW wind turbine, resulting in a worst-case scenario being evaluated" It is indicated that the hub height for each turbine will not exceed 130 m "worst-case scenario" and rotor diameter is anticipated to be a maximum of 170 m "worst case scenario". There is thus a discrepancy between the proposed turbines (66 x 4.5 Megawatts) and the turbines used in the study (66 x 3.45 Megawatts). This is a significant matter and is discussed further in this document.

1.4 The Albany Wind Energy Facility will be West of Makhanda / Grahams town. The proposed development and immediate receiving environment situation is geographically as below:

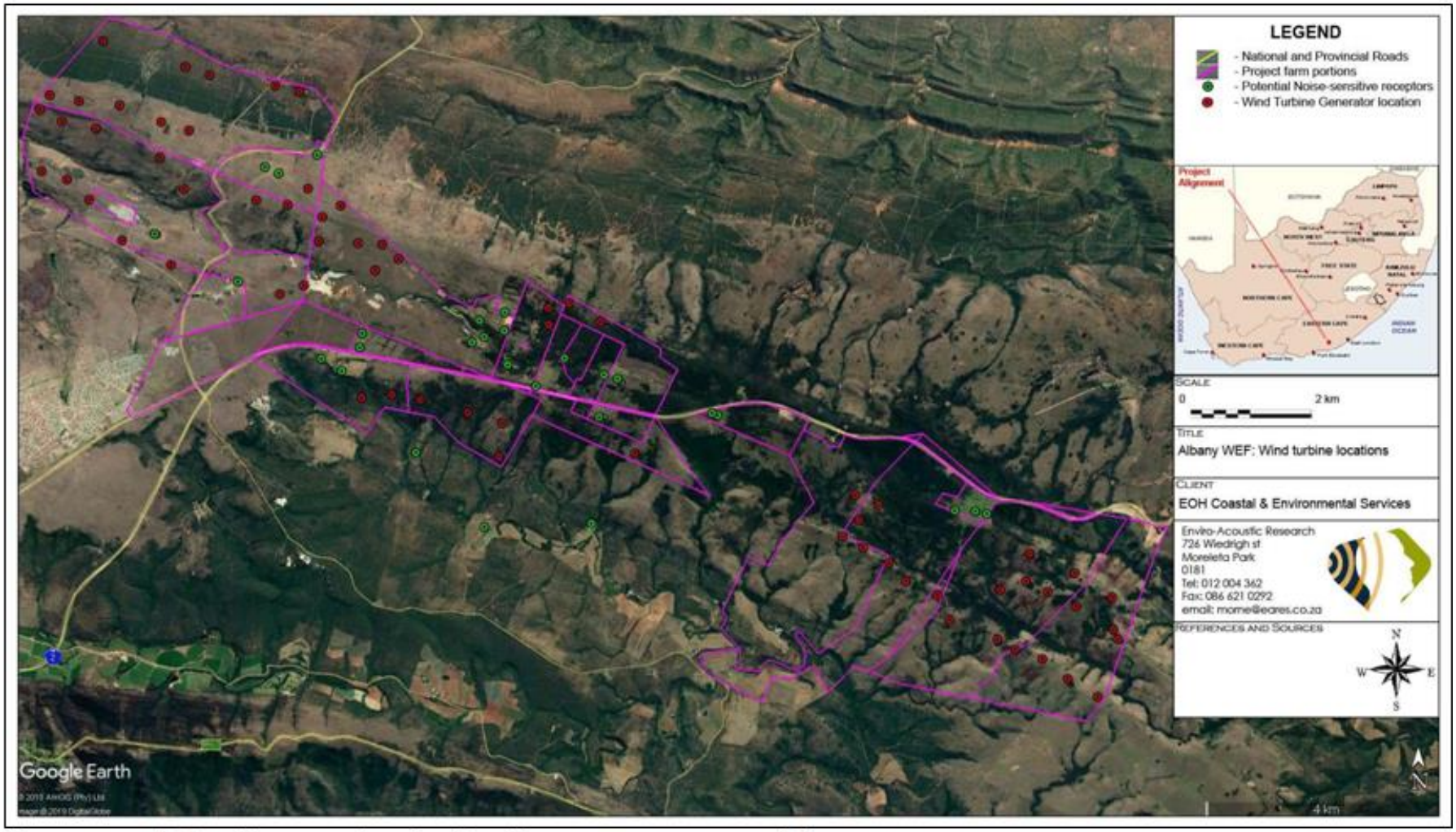


Figure 8-1: Wind Turbine Locations for the Albany WEF – Layout Revision 8.5

Red dots : Turbine Location : Green dots: Noise Sensitive location

2 Discussion

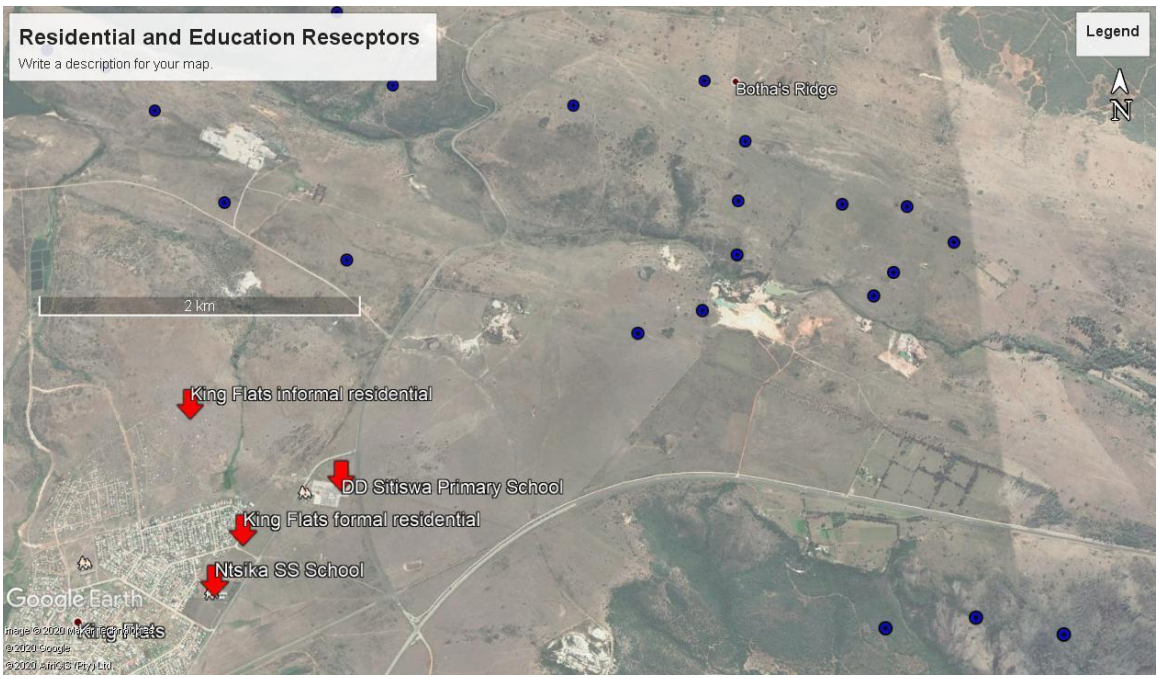
2.1 Ad. Paragraph 1.2: Project Description.

2.1.1 The Project description p 1 " 66 turbines, each capable of generating up to 4.5 Mega Watts (MW) of power" and p2 "Up to 66 wind turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 85 m". However this is contradicted by page 2 "For the purpose of this noise impact assessment the sound power emission levels of the Vestas V136 3.45 MW wind turbine has been used". Of concern here is that the Albany NIA indicates on page 106 "This study used the noise emission characteristics of the Vestas V136 3.45 MW wind turbine, resulting in a worst-case scenario being evaluated".

Considering the substantial difference in sound power generation between turbines of such magnitude in output (and the lack of consideration and mention of as much), this statement brings into disrepute the entire report as 4.5 MW turbine produces at least 20% more noise than a 3.45 MW turbine of similar construction. Thus any calculations based on 3.45 MW turbines will be 20% inaccurate (and a substantial underestimation in contradiction with the p106 statement that it is a "worst-case scenario being evaluated".

2.1.2 In Section 1.3.5 The report states that " Excluding potentially noise-sensitive developments identified in **Section 1.3.7**, there are no formal residential areas, communities or towns close to the facility (within 5 km). It should be noted that there may be a number of people (mainly farm workers) staying in small groups on the various farms (see also **Figure 1-2**).". In point of fact **Section 1.3.7** has no reference at all to "no formal residential areas, communities or towns close to the facility" but addresses the matter of existing ambient noise levels. It may well be that there are no there are no "formal residential areas, communities or towns close

to the facility (within 5 km)". But this obfuscates the fact that there communities and residents of farms , private game parks and reserves which are noise - sensitive receptors within 5 km and a little as 2 km.



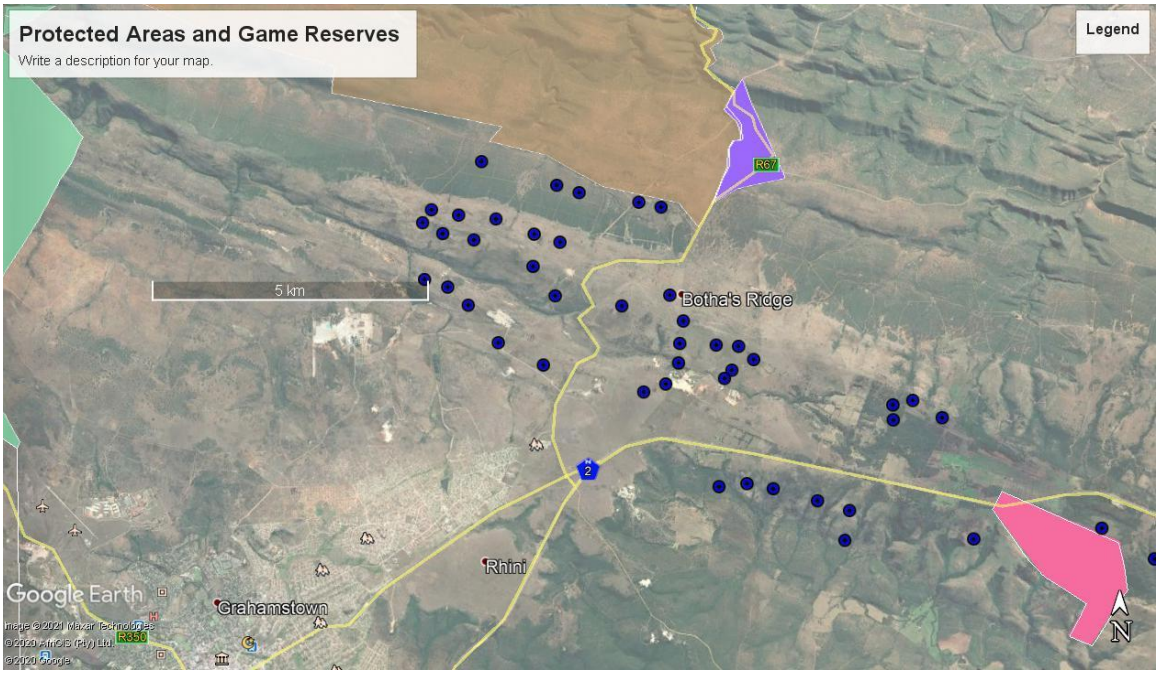
2. Further, in **Figure 8-1** is similarly inaccurate in that there are more than 20 noise sensitive location near to the facility including formal protected areas as well as private game reserves. The turbines will be within 5 km of the following reserves (refer figure below):

   A.12.1. Kwandwe South Game Reserve.

   A.12.2. Blaauwkrantz Local Authority Nature Reserve

   A.12.3. Beggars Bush Forest Reserve (turbines straddling this reserve)

   A.12.4. Numerous game farms and lodges.



Further to that there are game farms and working farms which have as much right as any person to not be disturbed by noise.

2.2 Ad. para 2.1 : Legal context

2.2.1 The report provides a high level generic overview of noise legislation in South Africa most notably Noise Control Regulations (GN R.154 of 1992) and the Model Air Quality Management By-law for adoption and adaptation by Municipalities (GN 579 of 2010), some SAN standards and examples of foreign and international practice for wind farms.

2.2.2 Noise control in the Eastern Cape Province is in the first place regulated by the Noise Control Regulations, 1992 (GN R.154 of 1992) published in terms of section 25 of the Environmental Conservation Act, No. 73 of 1989 (ECA) (assigned to the provinces by Proc R. 29 of 7 April 1995 and Proc R. 43 of 8 Aug 1996), unless augmented or superseded by more recent provincial noise regulations or local noise

by-laws. This has not occurred for the Eastern Cape Province or for the Sarah Baartman District Municipality or the Makana Local Municipality where the Albany WEF will be located. It means that noise control by the Albany WEF must comply with the requirements of the ECA Noise Control Regulations and technical standards of the SANS such as SANS 10103:2008 for the measurement and rating of environmental noise with respect to annoyance. (SANS 10103 prescribes other SANS standards for its application.)

2.2.3 Regulation 4 of the ECA Noise Control Regulations prohibits a disturbing noise[1], and regulation 5 the causing of a noise nuisance[2]. Regulation 6 stipulates the measurement of dBA for noise controlled areas, ambient sound level[3], and noise levels.

2.2.4 Notwithstanding the requirements of provincial noise regulations or local by-laws, section 34(2) of the National Environmental Management: Air Quality Act, No. 39 of 2004 (NEMAQA) provides that the provincial and local governments must comply with national noise standards. Presently there are no such national noise standards published under NEMAQA, but the SANS apply.

2.2.5 Due to the outdated nature of the ECA Noise Control Regulations, the Minister on 2 July 2010 gazetted the Model Air Quality Management By-Law for easy adoption

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1 *"'**disturbing noise**' means a noise level which exceeds the zone sound level or, if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more."* SANS 10103:2008 provides for measurement of a noise disturbance in Annex B3.

2 *"'**noise nuisance**' means any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person."* SANS 10103:2008 does not refer to noise nuisance but to noise causing "*annoyance*" and describes its assessment in section 4.5.

3 *"'**ambient sound level**' means the reading on an integrating impulse sound level meter taken at a measuring point in the absence of any alleged disturbing noise at the end of a total period of at least 10 minutes, after such meter had been put into operation."* Section 3.1 of SANS 10103:2008 defines the "***ambient noise***" as referring to indoor ambient as *"totally encompassing sound in a given situation at a given time, and usually composed of sound from many sources, both near and far."* In contrast, the term *"**residual noise**"* refers to the *"totally encompassing sound in a given situation at a given time, and usually composed of sound from many sources, both near and far, excluding the noise under investigation."*

and adaptation by municipalities. However, the Sarah Baartman District Municipality or the Makana Local Municipality has not adopted or adapted the Model Air Quality Management By-Law which means that it has no binding legal effect but merely forms a non-binding policy guideline for the Albany WEF.

2.2.6 Section 1 of the Model by-law defines the "ambient sound level"[4] for purposes of a noise nuisance, and a "nuisance" as the unreasonable interference by the noise pollution[5] (in the case noise from proposed the Albany WEF). Section 18 addresses noise pollution. Subsection (1) prohibits the causing of a disturbing noise and in subsection (2) the causing of a noise nuisance. Subsections (3)(a) and (4)(a) require that a noise impact assessment (NIA) must be performed according to the requirements of SANS 10328 for new zones or the construction of new structures. Subsections (3)(b) and (c) prohibit new buildings that do not confirm to, or that will cause more noise than, the dominant land use specified in the municipal zoning scheme. Noise testing must be performed according to SANS 10103. Section 4 also places a general air pollution duty of care on the developer of the Albany WEF to prevent and, where impossible to mitigate any sound pollution from the WEF and it may be directed by the Municipality to take reasonable measures to do so, failing which it commits a criminal offense.

2.2.7 There are further broader legal sources that provide the normative legal value framework within which the results of the noise impact assessment (NIA) of the WEF undertaken in terms of to the Noise Control Regulations and relevant SANS standards must be considered. These legal sources are the fundamental environment right in

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4 "*The reading of an integrating sound level meter measured at the measuring point at the end of total period of at least 10 minutes after such integrating sound level meter has been put into operation, during which period a noise alleged to be a noise nuisance is absent.*"

5 *"An unreasonable interference or likely interference caused by air pollution with: (a) the health or well being of any person or living organism; (b) the use or enjoyment by an owner or occupier of his or her property or environment; and (c) the ordinary comfort, convenience and peace."*

section 24 of the Constitution, the environmental principles in section 2(4) and the duty of environmental care in section 28(1) of the National Environmental Management Act, No. 107 of 1998 (NEMA) not to cause significant noise pollution (noise levels that cause a disturbing noise or a nuisance) and the requirements of environmental impact assessment in section 24 of NEMA and the EIA Regulations, 2014. (These legal sources are further explained in an Annexure.)

2.2.8 The report further sets out requirements of various International Guidelines, including WHO, UK ETSU, Canada, International Finance Corporation, and the EU. These guidelines are covered at length, but it is not made clear how they apply to South Africa and Albany WEF NIA. According to section 39(1)(b) and (c) of the Constitution when interpreting the environmental right with respect to noise the noise impact of the WEF, one must consider international law and may refer to foreign law to support South African law. However, except for a few exceptions, most of these foreign and international examples referred to by the report are not law but merely examples of international practice or policy and it is not clarified as to how these are relevant and/or should be applied.

2.3 Legal Application

2.3.1 The report fails to note that SABS Code of Practice, SANS 10103: *The measurement and rating of environmental noise with respect to annoyance and to speech communication* is referenced in all South African noise control regulations. It is not a regulation but a standard which provides a basis for the definition of acceptable noise levels. Table 2 of the SANS 10103 standard sets out rating levels (expected sound pressure levels) in various districts/ land use categories. In addition, it has an explanatory note to the effect that:

NOTE 6 The noise from individual noise sources produced, or caused to be produced, by humans within natural quiet spaces such as national parks, wilderness areas and bird sanctuaries, should not exceed a maximum A- weighted sound pressure level of 50 dBA at a distance of 15 m from each individual source.

2.3.2 The report misuses the term "Ambient Noise" when in fact it should refer to "residual noise" as per the definition in of SANS 10103.

2.4 Ad. para 3.4: Ambient Sound Measurements

2.4.1 It is assumed that this title refers to "residual sound pressure level measurements".

2.4.2 The report states that " Fast-weighted equivalent sound levels are included in this report as this is the sound descriptor used in most international countries to define the Ambient Sound Level.". This is incorrect. SANS 10103 nowhere refers to "fast-weighting" but instead refers to "slow-weighting". We here provide the relevant section from SANS 10103 paragraph 5.1 Measurement Procedures:

"NOTE 2 In the case of a steady noise without impulsivity, the value of the equivalent continuous A-weighted sound pressure level can be obtained directly by visually averaging the readings on a sound level meter that complies with the requirements prescribed in 5.1.1 and while using **S-time weighting**, provided that the noise variations do not exceed 5 dBA."

Thus "S-time" (aka "slow time") is referenced, "fast time" is not. This would indicate an inappropriate and legally non-compliant setting was used all field measurements incorrect. All the residual noise measurements reported are thus likely to be incorrect.

2.4.3 Measurements were taken at five locations, four of which are within 5 km of each other and one some 15 km distant. This is not as per the requirements of SANS

10103 and are far too few measurements to establish the residual sound pressure levels of the area.

2.4.4 From SANS 10103: "**5.1.3.1.2 Grid measurements for noise mapping**

> "Noise levels at grid points for use in noise mapping, are normally calculated to obtain the long-term time interval average values. In special cases where measurements are required, the density of grid points in an area will depend on the spatial resolution required for the study concerned and the spatial variation of the sound pressure levels of the noise. This variation is strongest in the vicinity of sources and large obstacles. The density of the grid points should, therefore, be higher in these locations. In general the difference in sound pressure levels between adjacent grid points should not be greater than 5 dBA. If significantly larger differences are encountered, intermediate grid points may be used."

By using only five locations for measurements, the above requirements have not been complied with. So not only was an incorrect setting used on the sound measuring device, but an inadequate density of grid sampled (in fact so few measurements were made that it can hardly be described as a grid and at best be a grab sample albeit with the wrong settings).

2.4.5 The report refers to Table 3-6, Table 3-3, Table 3-9, Table 3-12, Table 3-14, Table 3-15 as giving the results of the ambient/residual measurements at five locations. These are associated with various graphs. The first set of graphs are of spectral frequencies. These graphs of spectral frequencies have no value at all since no discussion is made of them or their relevance. The other associated graphs (e.g.

Figure 3-13 and Figure 3-14) have plotted parameters Laeq,f and Laeq, i which are not defined in SANS 10103 and which are not used in South Africa, if indeed anywhere. It would thus appear as if irrelevant information is offered for reasons that is not clear but is concerning as it will give the layman an impression of authenticity and legitimacy when it is flawed and or irrelevant.

2.4.6 The report refers frequently to measurements being influenced by road traffic, tractors and domestic animals with special mention of the N2 (and increased traffic during holidays). These are intermittent disturbances and not representative of actual residual noise sources (these would cause noise measurements to be elevated above the true actual residual noise level).

2.5 Ad. Para 4.2.1 Wind Turbine Noise: Aerodynamic Sources

2.5.1 The report in Figure 4-1 lists noise emissions from a range of wind turbines. The turbine chosen for the study, the Vesta V136 3.45 MW turbine has a much lower noise emission curve than the others and seems to have been chosen for the purposes of modelling noise for this reason, despite earlier statements that a 4,5 MW turbine is proposed to be used. The assessment thus choses to use a smaller turbine of lower noise emissivity rather than a larger turbine of higher noise strength that is proposed to be constructed. The reasons for this cannot be sure but appear suspicious and appears disingenuous.

2.6 Ad Paragraph 6.1 Noise Impact on Animals

2.6.1 The report indicates that “Few studies indicate definitive levels where noises start to impact on animals,” and further indicates “More sensitive species would relocate to a more quiet area, especially species that depend on hearing to hunt or evade prey, or species that makes use of sound/hearing to locate a suitable mate”, and with

respect to wildlife "Studies showed that most animals adapt to noises, and would even return to a site after an initial disturbance, even if the noise is continuous. The more sensitive animals that might be impacted by noise would most likely relocate to a quieter area.". The above statements are in contradiction with various studies that show substantial changes in foraging and anti-predator behavior, reproductive success, habitat selection, vulnerability, longevity, abundance and community structure in a number of species exposed to noise (Barber, Crooks, and Fristrup 2010[6]; Hildebrand 2009[7]; Meyer-Holzapfel 1968[8]; Spanier, Cobb, and Clancy 1994[9]; Swaddle 2012[10]) and certain laboratory animals exposed to chronic noise exhibit many physiologically similar responses as humans ((Milligan, Sales, and Khirnykh 1993[11]). Considering the wide ranging biodiversity economy of the region comprised of formally protected areas (Indalo Protected Environment), private game reserves, game farms and hunting lodges and the diversity of species protected and utilized for nature and wildlife tourism, hunting and or otherwise, the above statements are not nearly adequate to be upheld as an assessment of impact to fauna and the economy it supports.

2.6.2 Furthermore and more specifically relating to communication by fauna in frequencies particularly significantly impacted by wind turbines, already some 15

[6] Barber, J. R., K. R. Crooks, and K. M. Fristrup. 2010. The costs of chronic noise exposure for terrestrial organisms. Trends in Ecology & Evolution 25:180-189.
[7] Hildebrand, J. A. 2009. Anthropogenic and natural sources of ambient noise in the ocean. Marine Ecology Progress Series. 395.
[8] Meyer-Holzapfel, M. 1968. Abnormal behavior in zoo animals. Abnormal behavior in animals 476-503.
[9] Spanier, E., J. S. Cobb, and M. Clancy. 1994. Impacts of remotely operated vehicles (ROVs) on the behavior of marine animals: an example using American lobsters. Marine ecology progress series. Oldendorf 104:257-266.
[10] Swaddle, J. P., K. L. Cornell, C. R. Kight, R. B. Burdge, A. R. Gunderson, J. K. Hubbard, A. K. Jackson, J. E. LeClerc, M. L. Pitts, and D. A. Cristol. 2012. Noise pollution is associated with changes in breeding behavior and fitness of eastern bluebirds. Paper presented at: 49th Annual Meeting of the Animal Behavior Society, 12 June 2012, Albuquerque: University of New Mexico.
[11] Milligan, S. R., G. D. Sales, and K. Khirnykh. 1993. Sound levels in rooms housing laboratory animals: an uncontrolled daily variable. Physiology & Behavior 53:1067-1076.

years prior to the Albany NIA Garstang (2003)[12] comprehensively investigated elephant communication and reports that "The pervasive use of low-frequency sounds by elephants is now well established together with increasing evidence of the distances traveled and complex social functions of vocalizations at low frequencies." It is further also known from literature e.g. Cinková and Policht (2014)[13] that rhino has a repertoire of sounds including infrasound that have been demonstrated to "allow for individual and species" to communicate.

2.6.3 In view of the wide spread literature relating to faunal communication amongst other of elephants and rhino which utilizes amongst others infrasound frequencies (below audible range) there is a clear lack of consideration to impacts to key faunal species relating to vulnerability, feeding, habitat selection, reproductive success, community structure as well as communication which is a substantive omission and fundamentally unbecoming considering the wider setting of the Albany WEF. A comprehensive faunal noise impact assessment as a minimum considering key faunal species are required.

2.7 Ad. Paragraph 8.2 : Operational Phase Noise Impact

2.7.1 Figure 8.4 below provides "Projected conceptual noise rating levels of the Albany WEF during operation". The NIA report does not indicate how the "conceptual noise rating levels of the Albany WEF during operation" as illustrated in Figure 8-4 have been derived. It would be normal professional practice to use a calculation based on a series of equations (for example Concawe or ISO 9613-2) or a software

[12] Garstang, M. Long-distance, low-frequency elephant communication. J Comp Physiol A 190, 791–805 (2004). https://doi.org/10.1007/s00359-004-0553-0
https://www.researchgate.net/publication/8363461_Long-distance_low-frequency_elephant_communication
[13] Cinková I, Policht R (2014) Contact Calls of the Northern and Southern White Rhinoceros Allow for Individual and Species Identification. PLOS ONE 9(6): e98475. https://doi.org/10.1371/journal.pone.0098475

program designed to calculate and plot noise contours (for example CADNA© or SoundPLAN©) which are used by acoustic specialists and various governments (for example SoundPLAN© is used by the Australian and German governments amongst others for noise plotting and to verify noise impact assessments).

In the report no attempts are made to explain the methodology used and thus Figure 8.4 is of little use as there is no way of verifying its veracity. The lack of a description of the methodology used in determining the turbine noise as function of distance, topography and weather leaves the study falling short of normal practice as well as the basic scientific principle of reproducibility, the lack of which does not allow meaningful peer review. It is further concerning that the figure refers to "conceptual" noise rating as opposed to "predicted", "modelled" or "calculated" which may imply that it only is a conceptual representation giving an indicative assessment of noise impact when in fact a verifiable quantitative method is required.

2.7.2 It should further to be noted that it is a requirement of NEMA EIA Regulations 385 Regulation 33 that stipulates "a description of the methodology adopted in preparing the report or carrying out the specialised process" is to be provided. Thus the lack of the methodology used in determining the noise rating levels of the Albany WEF not only leaves the report falling short of professional practice, and scientific principles, but further also leaves non-compliant with applicable EIA Regulations (and in turn thus similarly affects the EIA itself).

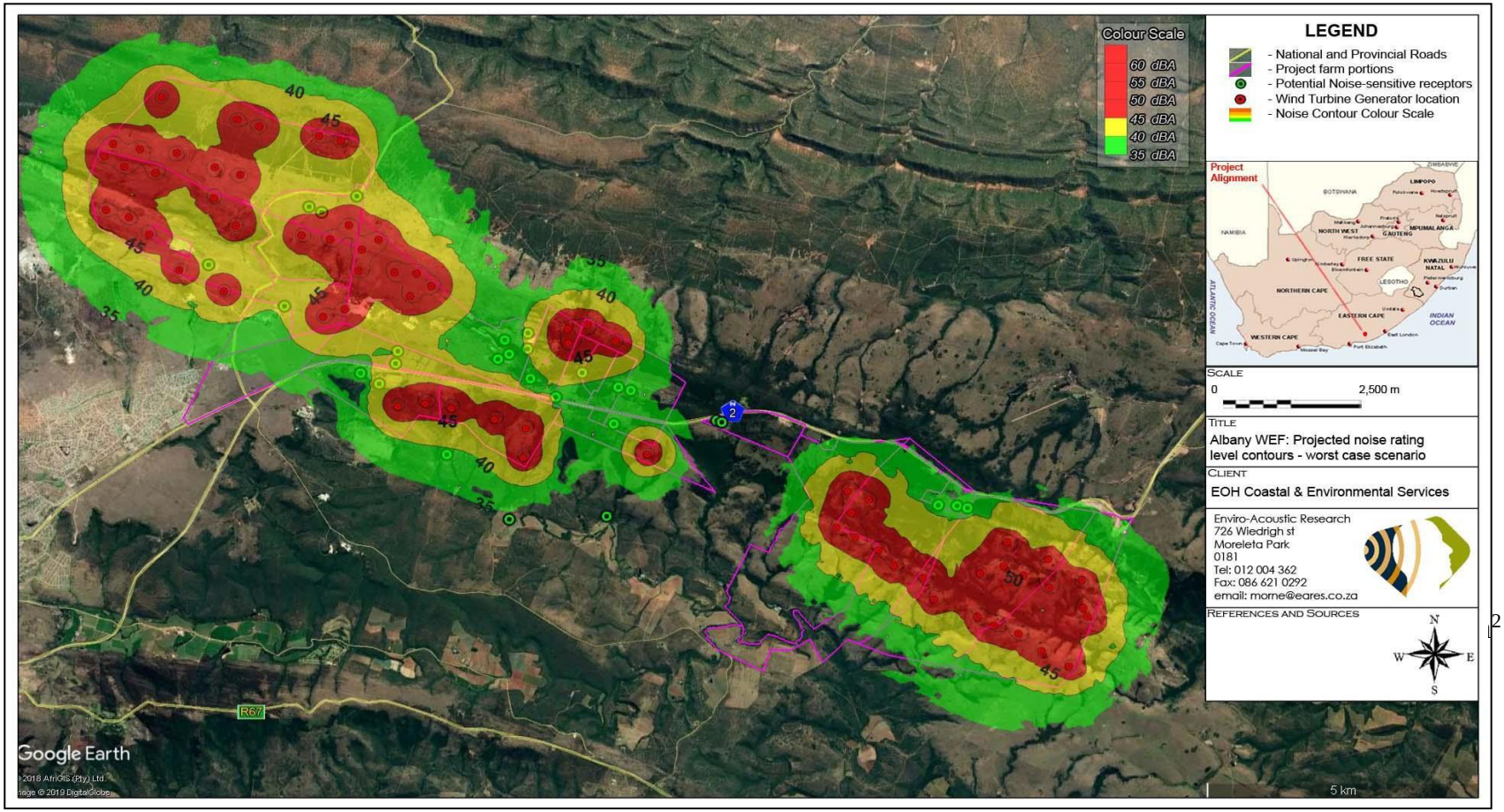
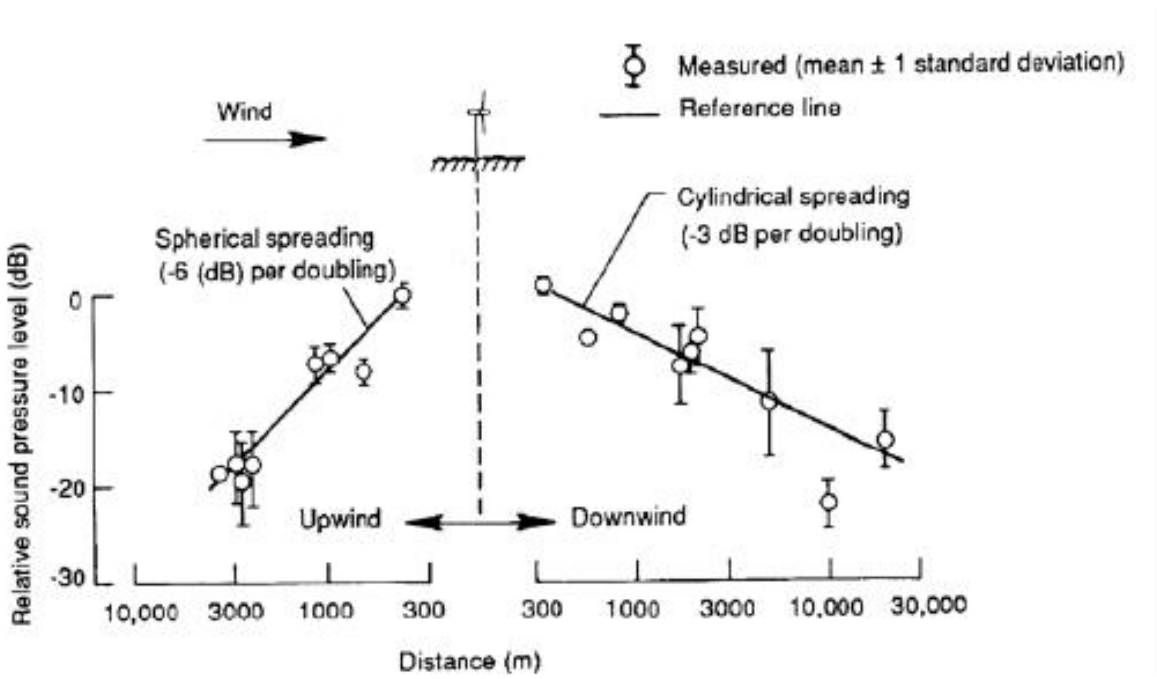


Figure 8-4: Projected conceptual noise rating levels of the Albany WEF during operation

2.8 Ad. Paragraph 8.3 : Cumulative Noise Impacts

2.8.1 The report states that "Cumulative noise impacts generally only occur when noise sources (such as other wind turbines) are closer than 2,000 m from each other (around 1,000 m from the conceptual receptor located between them). The cumulative impact also only affects the area between the wind turbines of the various wind farms."

This statement is incorrect. The noise from wind turbines decreases by 6 dB per doubling of distance for noise emissions upwind and by 3 dB per doubling of distance downwind (University of Notre Dame , Course work AME 40530)[14].



Example of the effect of wind on the propagation of low frequency rotational harmonic noise from a modern large-scale Horizontal Axis Wind Turbine (University of Notre Dame , Course work AME 40530).

[14] University of Notre Dame , AME 40530, Wind Turbine Acoustics (part of the the Course in - Wind Turbine Performance, Control and Design), https://www3.nd.edu/~tcorke/w.WindTurbineCourse/Acoustics_Presentation.pdf

The turbine used in the calculations, a Vestas V136, has a sound power level of 105 dBA for above 9 m/s wind speed. This is 94 dB at 1 m from the turbine for range of frequencies from 63 Hz to 1000 Hz. In the table below we can see that at a distance of 2048 m the level is 62 dB which is 4 times above the estimated residual / ambient noise level of 50 dBA and not 30 dBA as given in the report (Figure 8-5). This is a substantial error.

Noise Reduces at 3 dB per doubling of distance		
Distance from the Turbine	Sound Pressure level in dB	
1	95	dB
2	92	dB
4	89	dB
8	86	dB
16	83	dB
32	80	dB
64	77	dB
128	74	dB
256	71	dB
512	68	dB
1024	65	dB
2048	62	dB

In addition, noise is emitted from turbines in both the upwind and down wind direction and thus the statement that "the cumulative impact also only affects the area between the wind turbines of the various wind farms." cannot be true.

2.8.2 Note that SABS Code of Practice, SANS 10103: *The measurement and rating of environmental noise with respect to annoyance and to speech communication* is referenced in all South African noise control regulations. It is not a regulation but a standard which provides a basis for the definition of acceptable noise levels. Table

2 of the standard sets out rating levels (expected sound pressure levels) in various districts. In addition, it has an explanatory note to the effect that:

NOTE 6 The noise from individual noise sources produced, or caused to be produced, by humans within natural quiet spaces such as national parks, wilderness areas and bird sanctuaries, should not exceed a maximum A- weighted sound pressure level of 50 dBA at a distance of 15 m from each individual source.

Simple calculations as set out above indicate that the SANS 10103 limit of 50 dBA (as average measured over time) will be exceeded at the boundary of a number of formally protected areas.

2.8.3 The report states that "If the wind turbines of one wind farm are further than 2,000m from the wind turbines of the other wind farm, the magnitude (and subsequently the significance) of the cumulative noise impact is reduced. If the distance between the wind turbines of two wind farms are further than 4,000m, cumulative noise impacts are non-existent. This is illustrated in Figure 8-5."

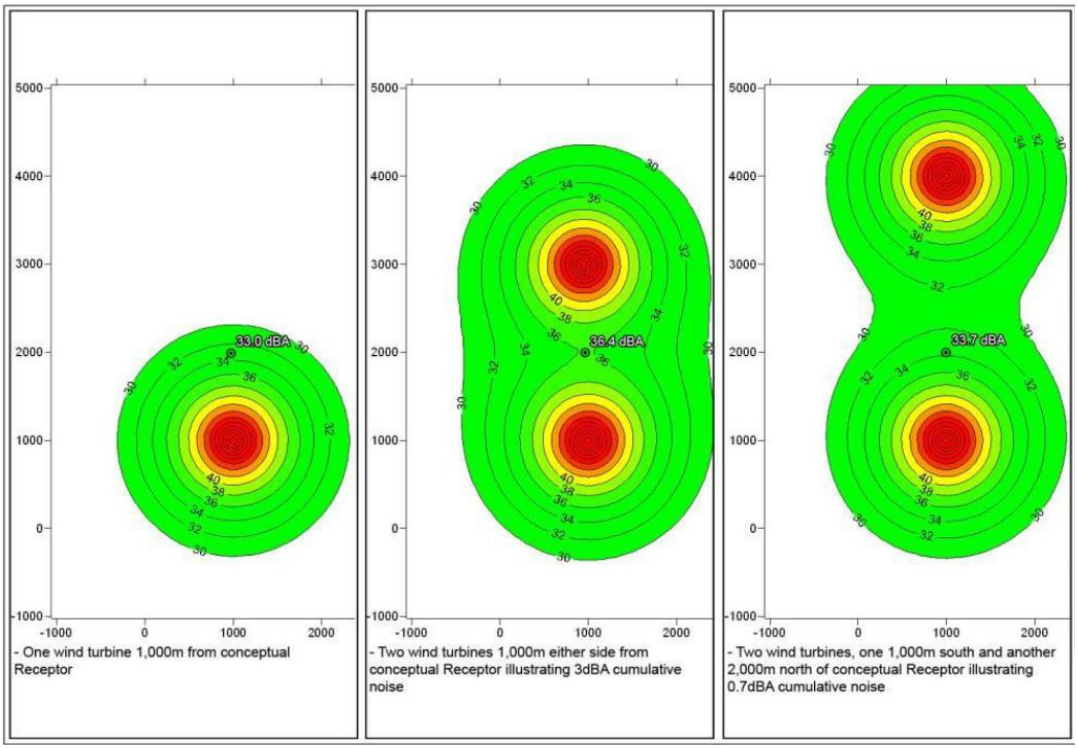


Figure 8-5: Effect of distance between wind turbines – potential cumulative noise

This is patently incorrect: from the calculation above if the distance between the wind turbines of two farms are 4000 m then, depending on topography, the effect will be 12 dBA above ambient.

Referring to Figure 8-5 : This figure cannot be correct. At a distance of 2000 m from one turbine the sound pressure level is 32 dBA which is far less that the actual value calculated here.

2.8.4 It is clear from the above that at least 29 noise sensitive locations are such that turbine noise will be audible and of these at 13 locations the noise will be 7 dBA or more above existing levels. Again, this is if the turbines chosen are Vestas V136 turbines of 3,45 MW. If the turbines are 4,5 MW turbines as proposed, then all of the 19 noise sensitive locations will be subject to noise levels 7 dBA or more above existing levels. A total of 14 turbines are within 1500 m of the noise sensitive locations.

2.8.5 With respect to the calculation of noise impact we further refer to Health Canada's Community Noise and Health Study (2014) as undertaken by MG Acoustics with the objective of informing health impact of wind energy noise and published by Keith et al 201615 and Keith et al 201816. The limitations of ISO 9613-2 are set out in both publications and Keith et al 2016 confirms the requirement for more advanced modelling calculations "for large distances, when there are large numbers of wind turbines, or when investigating specific meteorological classes" which are all applicable in the case of Albany.

[15] Keith, S. E., Feder, K., Voicescu, S. A., Soukhovtsev, V., Denning, A., Tsang, J., Broner, N., Leroux, T., Richarz, W., and van den Berg, F. (2016). "Wind turbine sound pressure level calculations at dwellings," J. Acoust. Soc. Am. 139(3), 1436–1442. https://asa.scitation.org/doi/10.1121/1.4942404#_i2

[16] S.E. Keith, G.A. Daigle, M.R. Stinson. Wind turbine low frequency and infrasound propagation and sound pressure level calculations at dwellings. J Acoust Soc Am, 144 (2018), pp. 981-996, 10.1121/1.5051331. https://asa.scitation.org/doi/10.1121/1.5051331

2.9 Ad. Para 9.3 : Significance of Operational Phase Noise Impact

2.9.1 In the report "Figure 9-1: Projected noise levels at different wind speeds, indicates that the residual noise level (LAeq) will not influence levels at the various locations NSD 01 to NSD 28".

This is in contradiction to Figure 8.4 above in which at least two locations are within the 50 dBA contour and 13 within 800 metres of various turbines. Under this circumstance Table 9-3 is wholly incorrect.

2.10 Ad. Paragraph 11: Environmental Management plan.

2.10.1 In this section the report proposes that in effect the facility be constructed and if complaints arise after construction they should be investigated. This will not solve the problem in any way.

2.11 Ad. Paragraph 13: Conclusions and Recommendations

2.11.1 The report states that :" The potential noise impact must again be evaluated should the layout be changed where any wind turbines are located closer than 1,000 m from a confirmed NSD or if the developer decides to use a different wind turbine that has a sound power emission level higher than the Vestas WTG used in this report (sound power emission level exceeding 105 dBA re 1 pW)".

2.11.2 This renders the whole report meaningless: it is the intention of the developer to use 4,5 MW turbines, as stated in the project description:

2.11.3 " The proposed Albany WEF may consist of up to 66 turbines, each capable of generating up to 4.5 Mega Watts (MW) of power." Consequently any prediction based on a 3,5 MW Turbine such as the Vestas used will be a substantial under prediction and is of little value other than perhaps to mislead.

Conclusions

3.1 The report provides a high-level generic overview of noise legislation in South Africa most notably Noise Control Regulations (GN R.154 of 1992) and the Model Air Quality Management By-law for adoption and adaptation by Municipalities (GN 579 of 2010). It would thus appear as if the legal requirements applicable have been delineated but in fact applicable legislation have not been identified such that appropriate noise limits and compliance requirements are derived and stipulated.

3.2 The report records residual / ambient noise measurements at 5 locations. There are however 27 noise sensitive locations (as stated in the report) and thus for 22 of them these is no measurement record of existing conditions.

3.3 The report only superficially deals with noise impact to fauna and otherwise deals exclusively considers noise impact on humans there is a clear lack of consideration to impacts to key faunal species relating to vulnerability, feeding, habitat selection, reproductive success, community structure as well as communication.

3.4 The noise prediction and impact assessment were undertaken using 3,45 MW turbine and not the 4,5 MW turbine proposed for use in the considering that the 4,5 MW turbines have a 20% greater noise generation. this statement brings into disrepute the entire report and is in contradiction with the p106 statement that it is a "worst-case scenario being evaluated".

3.5 The report fails to mention that the turbine area is located within 5 km of a number of protected areas, private game reserves and game farms and study maps fails to indicate protected areas, game reserves and game farms and fails to consider biodiversity economy of the region comprised of formally protected private game reserves (Indalo Protected Environment), game farms and hunting lodges and the diversity of species protected and utilized for nature and wildlife tourism, hunting and otherwise

3.6 The report states that at nine noise sensitive locations the wind turbine noise will be audible and at one location, disturbing. The report suggest that at NSD 17 the occupants can be relocated if they find the turbine noise disturbing. This is constitutionally unacceptable.

3.7 The lack of a description of the methodology used in determining the turbine noise as function of distance, topography and weather leaves the study falling short of normal practice as well as basic scientific principles of reproducibility. Also the report thus do not meet the NEMA EIA Regulations 385 Regulation 33 stipulating the need for "a description of the methodology adopted in preparing the report or carrying out the specialised process".

3.8 The noise contour maps plotted not only offered without any description as to the methodology are largely incorrect (37 dBA contours plotted as 30 dBA).

3.9 The report is thus substantially flawed and as it stands it hides the severity of the noise impact that the Albany WEF will have on its receiving environment and is oblivious to the exceedance of SANS 10103 noise limits at various sensitive noise receptors (including various formal protected areas) that the development will bring about.

3.10 The report thus only at best meets in part the requirements of Regulation 17 of the EIA Regulations, 2010 (d) comply with the Act, in that it would indicate the project is desirable when in fact it will lead to substantial non-compliance to applicable SANS standards and constitute a major nuisance.

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