

- Legend**
- Proposed Turbine Location
 - Application Boundary
 - 5km Radii
 - 20km Study Area
 - Operational Turbine
 - Viewpoint Location
 - Night Time Assessment Viewpoint Location
 - * Dark Sky Park Viewing Location
 - Dark Sky Park Core
 - Dark Sky Park Buffer

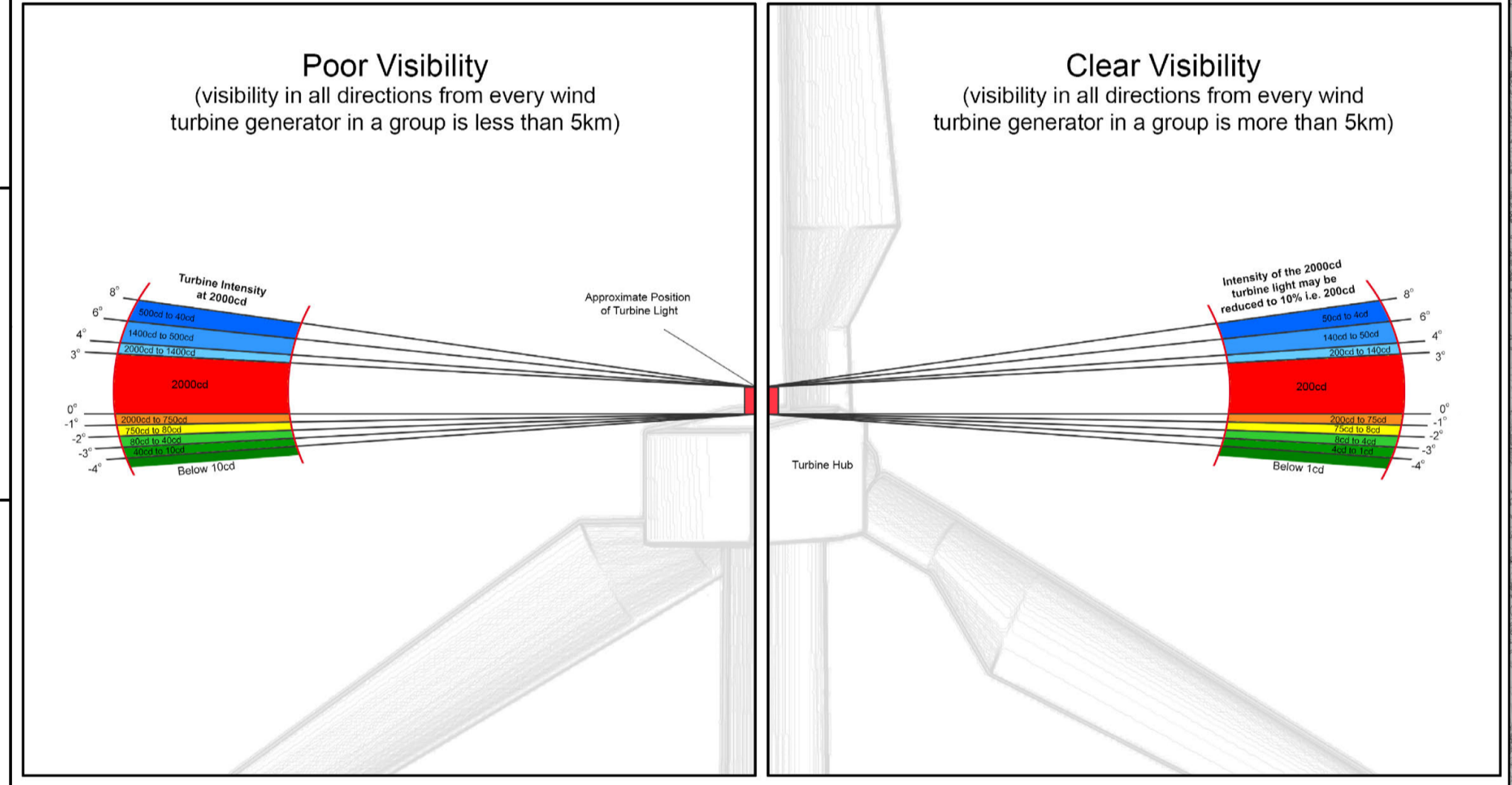
Intensity of Turbine Light shown in Candelas (cd)

Vertical Angle	Turbine Lighting Intensity	
	2000cd light	200cd light
0° to 3°	2000cd	200cd
0° to -1°	2000cd to 750cd	200cd to 75cd
-1° to -2°	750cd to 80cd	75cd to 8cd
-2° to -3°	80cd to 40cd	8cd to 4cd
-3° to -4°	40cd to 10cd	4cd to 1cd
Below -4°	Below 10cd	Below 1cd

- Notes**
1. Reduced intensity turbine lighting (200cd) based on 'Air Navigation Order 2016 (CAP393) Article 223 (8)' which allows the 2000cd turbine light to be 'reduced to not less than 10% of the minimum peak intensity specified' i.e. 200cd 'if visibility in all directions from every wind turbine generator in a group is more than 5km'.
 2. The lighting intensity for each of the vertical angles shown is based on information provided by an aviation warning light bulb manufacturer. See Appendix 6.2.
 3. Perception of theoretical candela intensity does not take account of distance.
 4. ZTV calculations do not take into account surface features such as forestry or buildings.
 5. ZTV calculations for turbine lighting intensity based on visible aviation lighting mounted on the turbine hub.
 6. The ZTV calculates the degree of vertical angle from the study area shown to each of the proposed Development turbines.
 7. ZTV calculations represent a worst case situation where predicted lighting intensity may be as a result of only one turbine in the layout.
 8. No landform within the study area is above 3 degrees from the height of the turbine lighting.

Diagram illustrating the Light Intensity Variation from the proposed turbine light

The turbine light is designed to emit light horizontally in 360 degrees. The diagram is only split vertically to illustrate the difference between the light intensity in Clear and Poor visibility conditions



Hub height:	105 m	Observer height:	2m
DTM:	OST5 / OST50	Surface features:	Excluded
DTM resolution:	10 m	Earth curvature:	Included



Rev	Date	By	Comment
C	10/12/19	LA	Third Issue.
B	22/11/19	LA	Second Issue.
A	12/11/19	LA	First Issue.

1:90,000
Scale @ A1



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Kilgallioch Windfarm Extension
Technical Appendix
Lighting Intensity (20km)

Drg No	EDI_1706_EIAR	
Rev	C	Datum: OSGB36
Date	10/12/19	Projection: TM
Figure	TA6.2-5	