

Technical Appendix 5.3: Aviation Lighting Night-Time Impact Assessment Part 2

Note:
The ZTV illustrates the nacelle lighting visibility of the proposed Glenouther Wind Farm calculated to nacelle lighting height (turbine hub height 119 m) from a viewing height of 2 m above ground level. The turbines that are proposed to have nacelle lighting are turbines 1, 3, 4 and 5. Visibility is shown to a distance of 45 km from the lit turbines in all directions. The ZTV is calculated to turbine hub height from a viewing height of 2 m above ground level. The terrain model is derived from OS Terrain 5 and OS Terrain 50 height data (obtained from Ordnance Survey in 2026). Earth curvature and atmospheric refraction have been taken into account. The ZTV was calculated using ArcGIS Pro 3.6.1 software.

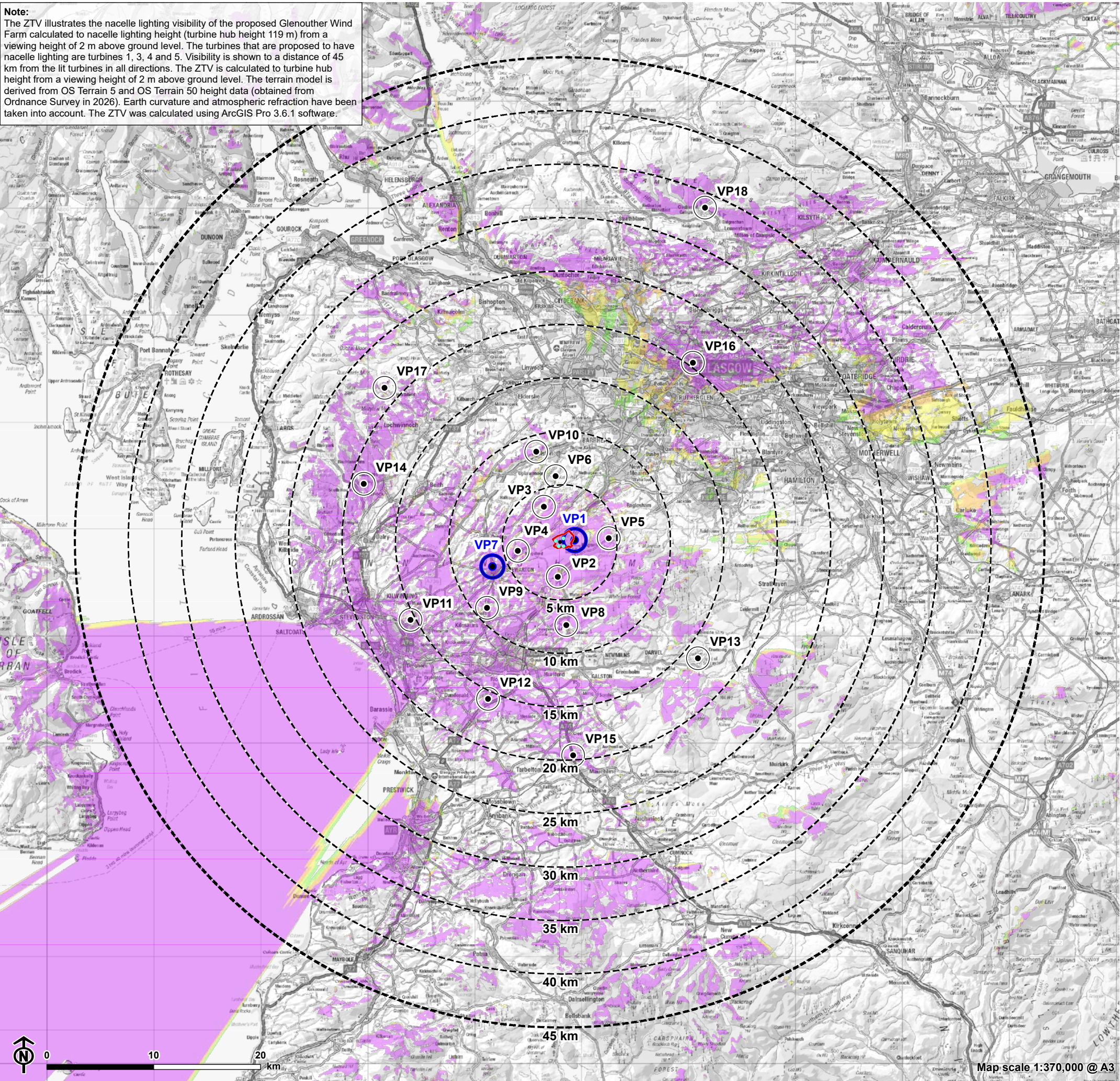


Figure A5.3.1: Aviation Lighting Zone of Theoretical Visibility (ZTV) - Nacelle Lighting

- Site boundary
- Lit turbine
- Turbine
- 5 km intervals from outermost turbines
- 45 km from outermost turbines
- LVIA day-time viewpoint
- LVIA day-time and night-time viewpoint

- A77 near Drumbo
- Glassock Bridge - A77/A719
- Harelaw Road
- Kingsford B769
- Queenseat B764
- Neilston Pad
- Dunlop Road (A735), Stewarton
- Berryhill Moscow A719
- Builston A735
- Forside
- Standing Stones, north of Irvine
- B7038 Ditton south of Kilmarnock
- Loudon Hill A71
- Kilbirnie Connelston A760
- Mauchline A76
- Glasgow Necropolis
- Clyde Muirshiel Regional Park Visitor Centre
- Wright's Well, Campsie Fells

Zone of Theoretical Visibility (nacelle lighting turbine hub height 119 m)

- 1 nacelle light visible
- 2 nacelle lights visible
- 3 nacelle lights visible
- 4 nacelle lights visible



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The highest candela value calculated by Contamex for the CEL-WT-MIC aviation warning light was 2206cd. This occurs at a vertical angle of 0.6° and so may occur in the 0° to 1° range shown in this table and on Figure A5.2.5 and A5.3.3.

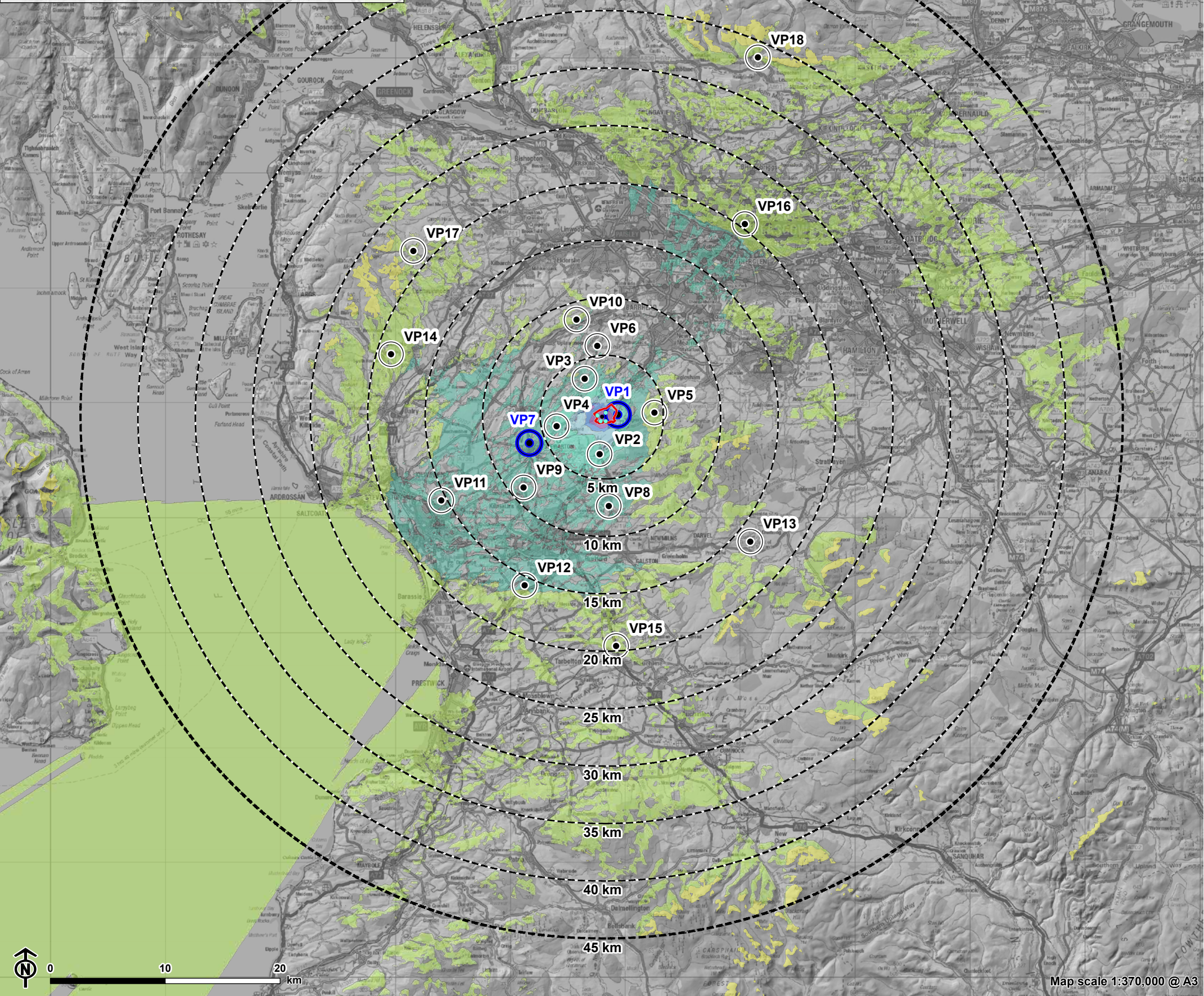


Figure A5.3.2: Visible Aviation Light Intensity Zone of Theoretical Visibility

- Site boundary
- Lit turbine
- Turbine
- 5 km intervals from outermost turbines
- 45 km from outermost turbines
- LVIA day-time viewpoint
- LVIA day-time and night-time viewpoint

- 1: A77 near Drumboy
- 2: Glassock Bridge - A77/A719
- 3: Harelaw Road
- 4: Kingsford B769
- 5: Queenseat B764
- 6: Neilston Pad
- 7: Dunlop Road (A735), Stewarton
- 8: Berryhill Moscow A719
- 9: Builston A735
- 10: Foreside
- 11: Standing Stones, north of Irvine
- 12: B7038 Ditton south of Kilmarnock
- 13: Loudon Hill A71
- 14: Kilbirnie Connellston A760
- 15: Mauchline A76
- 16: Glasgow Necropolis
- 17: Clyde Muirshiel Regional Park Visitor Centre
- 18: Wright's Well, Campsie Fells

Vertical angle of lighting from nacelle	Maximum luminous intensity (cd)	Minimum luminous intensity (cd)	10% Maximum luminous intensity (cd)	10% Minimum luminous intensity (cd)
Above 5°	146.74	33.98	14.67	3.40
4° to 5°	247.02	134.45	24.70	13.45
3° to 4°	481.39	236.85	48.14	23.69
2° to 3°	1159.9	481.34	115.99	48.13
1° to 2°	2118.8	1169.6	211.88	116.96
0° to 1°	2205.5	1968.4	220.55	196.84
-1° to 0°	2035.9	986.85	203.59	98.69
-2° to -1°	995.52	382.92	99.55	38.29
-3° to -2°	393.66	197.24	39.37	19.72
-4° to -3°	199.15	130.89	19.92	13.09
-5° to -4°	130.79	91.7	13.08	9.17
Below 5°	94.03	38.37	9.40	3.84

Note:
The ZTV illustrates the nacelle lighting visibility of the proposed Glenouther Wind Farm calculated to nacelle lighting height (turbine hub height 119 m) from a viewing height of 2 m above ground level. The turbines that are proposed to have nacelle lighting are turbines 1, 3, 4 and 5. Visibility is shown to a distance of 20 km from the lit turbines in all directions. The ZTV is calculated to turbine hub height from a viewing height of 2 m above ground level. The terrain model is derived from OS Terrain 5 and OS Terrain 50 height data (obtained from Ordnance Survey in 2026). Earth curvature and atmospheric refraction have been taken into account. The ZTV was calculated using ArcGIS Pro 3.6.1 software.
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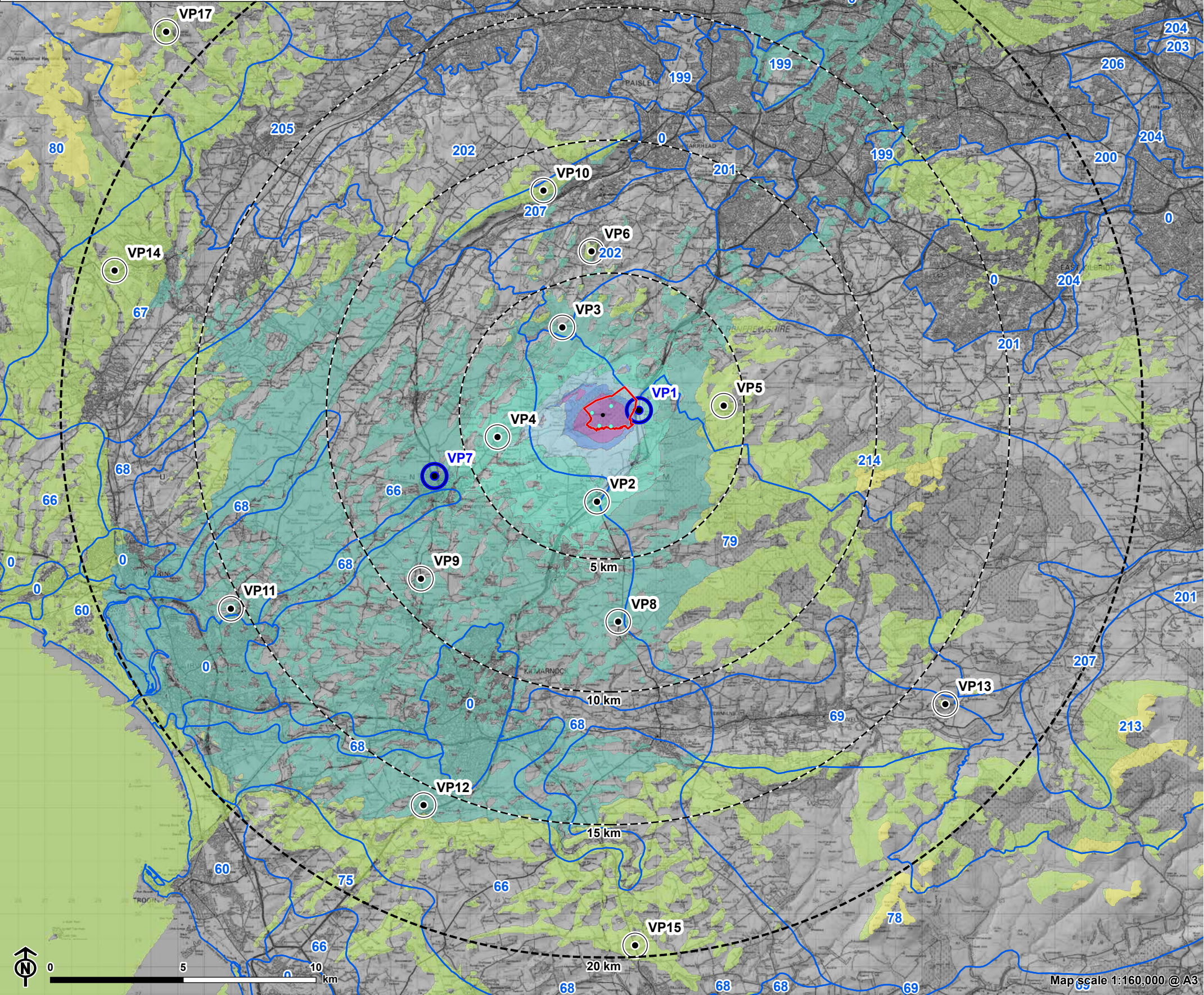


Figure A5.3.3a: Visible Aviation Light Intensity Zone of Theoretical Visibility to 20 km

- Site boundary
- Lit turbine
- Turbine
- 5 km intervals from outermost turbines
- 20 km from outermost turbines
- LVIA day-time viewpoint
- LVIA day-time and night-time viewpoint

- 1: A77 near Drumboy
- 2: Glassock Bridge - A77/A719
- 3: Harelaw Road
- 4: Kingsford B769
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- Landscape Character Types (NatureScot 2019)

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-4° to -3°	199.15	130.89	19.92	13.09
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Below 5°	94.03	38.37	9.40	3.84

For LCT descriptions see figure A5.3.3b.

Landscape Character Types (NatureScot 2019)

- 0: Urban
- 60: Low-Lying Coast
- 66: Agricultural Lowlands - Ayrshire
- 67: Broad Valley Lowlands - Ayrshire
- 68: Lowland River Valleys - Ayrshire
- 69: Upland River Valleys - Ayrshire
- 75: Lowland Hills - Ayrshire
- 78: Plateau Moorland - Ayrshire
- 79: Plateau Moorland with Windfarms - Ayrshire
- 80: Rugged Moorland Hills and Valleys
- 198: Agricultural Plain - Glasgow & Clyde Valley
- 199: Urban Greenspace
- 200: Rolling Farmland - Glasgow & Clyde Valley
- 201: Plateau Farmland - Glasgow & Clyde Valley
- 202: Rugged Upland Farmland
- 203: Urban Fringe Farmland
- 204: Incised River Valleys
- 205: Broad Valley Lowland - Glasgow & Clyde Valley
- 206: Broad Urban Valley
- 207: Upland River Valley - Glasgow & Clyde Valley
- 213: Plateau Moorlands - Glasgow & Clyde Valley
- 214: Plateau Moorland with Windfarms - Glasgow & Clyde Valley
- 216: Rugged Moorland Hills

Figure A5.3.3b: Landscape Character Types - Descriptions