

Appendix 9.6 – Cumulative Developments

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Appendix 9.6: Cumulative Noise Immission Levels

Introduction

Table 9.6.1 shows the turbine coordinates used for the prediction of noise immission levels from each of the neighbouring wind farms under consideration, which when combined with the noise immission levels from the Proposed Development result in the cumulative or “overall” noise immission levels. Table 9.6.2 shows the turbine types installed or expected at each wind farm, together with their overall sound power levels at a wind speed of 8 m/s at 10 m height. The sound power levels shown include the uncertainties derived in each case as appropriate according to the guidance in the Institute of Acoustics Good Practice Guide.

Table 9.6.1 – Turbine Coordinates for Noise Predictions

| Turbine No. | Easting | Northing | Turbine No. | Easting | Northing |
|-------------------------------|----------------|-----------------|--------------------|----------------|-----------------|
| Douglas West | | | | | |
| T1 | 280331 | 633205 | T8 | 281769 | 632799 |
| T2 | 280690 | 633124 | T9 | 282110 | 632385 |
| T3 | 281111 | 633045 | T10 | 282170 | 631825 |
| T4 | 281331 | 631665 | T11 | 282490 | 632125 |
| T5 | 281577 | 631442 | T12 | 282296 | 632950 |
| T6 | 281651 | 633144 | T13 | 282570 | 632685 |
| T7 | 281771 | 631965 | | | |
| Dalquhandy Revised | | | | | |
| T1 | 279674 | 634793 | T9 | 279037 | 633681 |
| T2 | 279808 | 634499 | T10 | 278802 | 633276 |
| T3 | 280025 | 634175 | T11 | 278448 | 633295 |
| T4 | 279988 | 633262 | T12 | 278908 | 632553 |
| T5 | 279635 | 633381 | T13 | 279320 | 632770 |
| T6 | 279513 | 633732 | T14 | 279794 | 632839 |
| T7 | 279308 | 634083 | T15 | 279162 | 632358 |
| T8 | 279255 | 634454 | | | |
| Hagshaw Hill Repowered | | | | | |
| T1 | 278749 | 629561 | T8 | 279327 | 630246 |
| T2 | 279149 | 629586 | T9 | 278976 | 630329 |
| T3 | 279760 | 629664 | T10 | 279546 | 630730 |
| T4 | 279042 | 629950 | T11 | 279242 | 630900 |
| T5 | 279595 | 630026 | T12 | 278864 | 630881 |
| T6 | 280015 | 630194 | T13 | 278604 | 631053 |
| T7 | 279831 | 630506 | T14 | 279590 | 631291 |
| Hagshaw Hill Extension | | | | | |
| T1 | 280632 | 631203 | T11 | 278303 | 630782 |

| Turbine No. | Easting | Northing | Turbine No. | Easting | Northing |
|---------------------------|----------------|-----------------|--------------------|----------------|-----------------|
| T2 | 280713 | 631008 | T12 | 278446 | 630647 |
| T3 | 280349 | 631109 | T13 | 278581 | 630517 |
| T4 | 280475 | 630920 | T14 | 278706 | 630374 |
| T5 | 279833 | 631159 | T15 | 278204 | 630513 |
| T6 | 280002 | 631085 | T16 | 278325 | 630378 |
| T7 | 280116 | 630949 | T17 | 278455 | 630248 |
| T8 | 280250 | 630825 | T18 | 278585 | 630118 |
| T9 | 280280 | 630629 | T19 | 280355 | 630462 |
| T10 | 278696 | 629927 | T20 | 280519 | 630732 |
| Nutberry | | | | | |
| T1 | 276936 | 633340 | T4 | 277320 | 632610 |
| T2 | 277106 | 633118 | T5 | 277502 | 632403 |
| T3 | 277232 | 632877 | T6 | 277687 | 632194 |
| Cumberhead Revised | | | | | |
| T1 | 274565 | 631923 | T8 | 276367 | 632904 |
| T2 | 274776 | 632370 | T9 | 276392 | 632270 |
| T3 | 275158 | 631862 | T10 | 276193 | 633804 |
| T4 | 275804 | 632626 | T11 | 278675 | 631621 |
| T5 | 275175 | 632769 | T12 | 276731 | 632693 |
| T6 | 278733 | 632056 | T13 | 278292 | 632443 |
| T7 | 275859 | 632204 | T14 | 278205 | 632004 |
| Galawhistle | | | | | |
| T1 | 278151 | 629564 | T12 | 276312 | 630336 |
| T2 | 277848 | 629763 | T13 | 276764 | 630496 |
| T3 | 277809 | 630096 | T14 | 276386 | 630711 |
| T4 | 277815 | 630481 | T15 | 276502 | 631459 |
| T5 | 277746 | 630796 | T16 | 277178 | 631514 |
| T6 | 278060 | 630367 | T17 | 277449 | 631817 |
| T7 | 277702 | 631568 | T18 | 276764 | 631232 |
| T8 | 277330 | 630880 | T19 | 277608 | 631207 |
| T9 | 276623 | 629429 | T20 | 276879 | 630866 |
| T10 | 276386 | 629669 | T21 | 278173 | 631037 |
| T11 | 276480 | 630018 | | | |
| Auchrobert | | | | | |
| T1 | 274541 | 638638 | T7 | 274799 | 638941 |
| T2 | 274663 | 638343 | T8 | 275228 | 638772 |
| T3 | 274320 | 638062 | T9 | 275260 | 638462 |
| T4 | 274135 | 637777 | T10 | 275759 | 639036 |

| Turbine No. | Easting | Northing | Turbine No. | Easting | Northing |
|-------------------------------|----------------|-----------------|--------------------|----------------|-----------------|
| T5 | 273506 | 637702 | T11 | 275801 | 638716 |
| T6 | 273900 | 637478 | T12 | 275794 | 638389 |
| Dungavel | | | | | |
| T1 | 267540 | 637130 | T8 | 268332 | 635982 |
| T2 | 267870 | 636925 | T9 | 266922 | 636661 |
| T3 | 268115 | 636657 | T10 | 267311 | 636450 |
| T4 | 268530 | 636335 | T11 | 269185 | 635830 |
| T5 | 266930 | 637055 | T12 | 268714 | 635753 |
| T6 | 267295 | 636824 | T13 | 268808 | 635308 |
| T7 | 267630 | 636645 | | | |
| Kype Muir | | | | | |
| T1 | 270717 | 638122 | T14 | 272058 | 638645 |
| T2 | 271087 | 638023 | T15 | 272255 | 638354 |
| T3 | 271407 | 637789 | T16 | 272340 | 637882 |
| T4 | 270544 | 638992 | T17 | 271124 | 639878 |
| T5 | 270816 | 638699 | T18 | 271506 | 639437 |
| T6 | 271136 | 638515 | T19 | 271843 | 639333 |
| T7 | 271480 | 638380 | T20 | 272182 | 639143 |
| T8 | 271785 | 638177 | T21 | 272605 | 638956 |
| T9 | 271879 | 637789 | T22 | 272650 | 638312 |
| T10 | 270694 | 639448 | T23 | 271517 | 639855 |
| T11 | 271014 | 639180 | T24 | 272012 | 639807 |
| T12 | 271339 | 639001 | T25 | 272317 | 639623 |
| T13 | 271752 | 638823 | T26 | 272652 | 639406 |
| Kype Muir Extension | | | | | |
| T1 | 267803 | 637568 | T10 | 271484 | 637307 |
| T2 | 268152 | 637346 | T11 | 271267 | 636729 |
| T3 | 268499 | 637088 | T12 | 270988 | 637006 |
| T4 | 268936 | 636755 | T13 | 270705 | 636500 |
| T5 | 269207 | 636479 | T14 | 270426 | 636819 |
| T6 | 270552 | 637674 | T15 | 270221 | 635859 |
| T7 | 270622 | 637282 | T16 | 270163 | 636308 |
| T8 | 272034 | 637408 | T17 | 269705 | 636170 |
| T9 | 271838 | 636936 | T18 | 269950 | 636614 |
| Douglas West Extension | | | | | |
| T1 | 279277 | 631335 | T8 | 280290 | 632711 |
| T2 | 279356 | 631993 | T9 | 280607 | 632496 |
| T3 | 279649 | 631800 | T10 | 280920 | 632244 |

| Turbine No. | Easting | Northing | Turbine No. | Easting | Northing |
|-------------|---------|----------|-------------|---------|----------|
| T4 | 280129 | 631515 | T11 | 280975 | 631781 |
| T5 | 279793 | 632368 | T12 | 281354 | 632708 |
| T6 | 280077 | 632065 | T13 | 281508 | 632328 |
| T7 | 280551 | 631615 | | | |
| Hare Craig | | | | | |
| T1 | 273084 | 630745 | T5 | 273440 | 631633 |
| T2 | 273506 | 630938 | T6 | 273779 | 631346 |
| T3 | 273880 | 630674 | T7 | 274165 | 631109 |
| T4 | 274330 | 630680 | T8 | 273555 | 632106 |

Table 9.6.2 – Turbine Details for Cumulative Noise Predictions

| Wind Farm | no. of turbines | type | LwA at 8m/s* |
|------------------------|-----------------|--------------------------|--------------|
| Douglas West | 13 | Siemens SG-6.0-155 | 107.70 |
| Douglas West Extension | 13 | Siemens SG-6.0-155 | 107.70 |
| Dalquhandy | 15 | Senvion MM82 | 104.9 |
| Hagshaw Hill repowered | 14 | Siemens Gamesa SG6.0-155 | 107.7 |
| Hagshaw Hill extension | 20 | RePower MD77 | 103.8 |
| Nutberry | 6 | Nordex N90 | 107.5 |
| Cumberhead | 14 | Vestas V90 | 109.0 |
| Galawhistle | 22 | Vestas V80 | 107.0 |
| Auchrobert | 12 | Vestas V90 | 109.0 |
| Dungavel | 13 | Vestas V80 | 107.0 |
| Kype Muir | 26 | Vestas V90 | 109.0 |
| Kype Muir extension | 18 | Vestas V90 | 109.0 |
| Hare Craig | 8 | Siemens SG-6.0-155 | 107.70 |

* including uncertainty as defined by the IOA Good Practice Guide

