

Light meter readings KWFP

We set out to investigate the darkness of the night sky in and around Kielder reservoir, the observatory and the surrounding area. The intention was to measure what would then be used to support the application for Dark Sky Park status for the KWFP area. In total 184 readings were taken from 23 sites, giving an exceptional standard indicative of IDA regulations.

To fulfill IDA (International Dark Sky Association) <http://www.darksky.org/> regulations stipulated for gaining Dark Sky Park status. The aim is to be able to demonstrate dark enough to be regarded as a Dark Sky Park; *(It should be noted that these are not only locations with exceptional night sky, but locations that have gone above and beyond to exemplify public land management of our nocturnal resources.)* The readings were taken at various times so that they would not coincide with the moon in being visible. 23 separate locations were used with an average reading of 21.523. No allowances or scientific uncertainties were used when compiling this data, weather and time were inconclusive when trying to establish the primary aim which was to take meter readings at the locations listed below.

These readings put us as a 2 at best, on the bortle scale; definition here: Airglow weakly visible near horizon; M33 easily seen with naked eye; highly structured stars visible enough to cast shadows at dusk and dawn; clouds only visible as dark holes; surroundings still only barely visible silhouetted against the sky; many Messier globular clusters visible. These readings prove that this is an accurate description of the site. Transparency and seeing conditions will affect the sky per arc sec.

| Time & Date | Location | Map Ref; | Reading |
|---------------|---------------------|----------------|-----------|
| 19th Jan 2012 | Kielder Observatory | NY 60936 93259 | 21.97 |
| 20th Jan 2012 | Kielder Observatory | NY 60936 93260 | 22.41 |
| 21st Jan 2012 | Kielder Observatory | NY 60936 93261 | 21.74 |
| 22nd Jan 2012 | Kielder Observatory | NY 60936 93262 | 21.86 |
| 23rd Jan 2012 | Kielder Observatory | NY 60936 93263 | 22 |
| 24th Jan 2012 | Kielder Observatory | NY 60936 93264 | 21.36 |
| 25th Jan 2012 | Kielder Observatory | NY 60936 93265 | inclement |
| 26th Jan 2012 | Kielder Observatory | NY 60936 93266 | 22.12 |
| 27th Jan 2012 | Kielder Observatory | NY 60936 93267 | Inclement |
| 28th Jan 2012 | Kielder Observatory | NY 60936 93268 | 22.34 |
| 29th Jan 2012 | Kielder Observatory | NY 60936 93269 | 21.87 |
| 30th Jan 2012 | Kielder Observatory | NY 60936 93270 | 21.75 |
| 31st Jan 2012 | Kielder Observatory | NY 60936 93271 | 21.89 |
| 1st feb 2012 | Kielder Observatory | NY 60936 93272 | inclement |
| 2nd feb 2012 | Kielder Observatory | NY 60936 93273 | inclement |
| 3rd feb 2012 | Kielder Observatory | NY 60936 93274 | 21.99 |
| 4th feb 2012 | Kielder Observatory | NY 60936 93275 | inclement |
| 5th feb 2012 | Kielder Observatory | NY 60936 93276 | inclement |
| 6th feb 2012 | Kielder Observatory | NY 60936 93277 | inclement |

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|---------------|---------------------|----------------|-----------|
| 7th feb 2012 | Kielder Observatory | NY 60936 93278 | 22.1 |
| 8th feb 2012 | Kielder Observatory | NY 60936 93279 | inclement |
| 9th feb 2012 | Kielder Observatory | NY 60936 93280 | inclement |
| 10th feb 2012 | Kielder Observatory | NY 60936 93281 | 21.77 |
| 11th feb 2012 | Kielder Observatory | NY 60936 93282 | 22.45 |
| 12th feb 2012 | Kielder Observatory | NY 60936 93283 | 22.15 |
| 13th feb 2012 | Kielder Observatory | NY 60936 93284 | Inclement |
| 14th feb 2012 | Kielder Observatory | NY 60936 93285 | 21.89 |
| 15th feb 2012 | Kielder Observatory | NY 60936 93286 | Inclement |
| 16th feb 2012 | Kielder Observatory | NY 60936 93287 | Inclement |
| 17th feb 2012 | Kielder Observatory | NY 60936 93288 | 21.98 |
| 18th feb 2012 | Kielder Observatory | NY 60936 93289 | 21.91 |
| 19th feb 2012 | Kielder Observatory | NY 60936 93290 | inclement |
| 20th feb 2012 | Kielder Observatory | NY 60936 93291 | 22.3 |
| 20th feb 2012 | Catcleugh | NT 743034 | 22.95 |
| 20th feb 2012 | Byrness school | NT 758028 | 21.06 |
| 20th feb 2012 | Forest Drive Toll | NT 780002 | 22.54 |
| 21st feb 2012 | Kielder Observatory | NY 60936 93291 | 22.47 |
| 21st feb 2012 | Catcleugh | NT 743034 | 22.76 |
| 21st feb 2012 | Byrness school | NT 758028 | 22.18 |
| 21st feb 2012 | Forest Drive Toll | NT 780002 | 23.21 |
| 22nd feb 2012 | Kielder Observatory | NY 60936 93291 | 22.1 |
| 23rd feb 2012 | Catcleugh | NT 743034 | 21.07 |
| 23rd feb 2012 | Byrness school | NT 758028 | 20.96 |
| 23rd feb 2012 | Forest Drive Toll | NT 780002 | 21.33 |
| 23rd feb 2012 | 7 Linns | NY 6867 8012 | 21.56 |
| 23rd feb 2012 | Hopehouse | NY 6891 8064 | 22.25 |
| 23rd feb 2012 | Lord robinson | NY 6746 8117 | 21.38 |
| 23rd feb 2012 | Chirdon Head | NY 7127 8189 | 21.15 |
| 24th feb 2012 | Kielder Observatory | NY 60936 93291 | 21.58 |
| 24th feb 2012 | Catcleugh | NT 743034 | 21.05 |
| 24th feb 2012 | Byrness school | NT 758028 | 21.15 |
| 24th feb 2012 | Forest Drive Toll | NT 780002 | 22.07 |

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|----------------|---------------------|----------------|-----------|
| 24th feb 2012 | Gowanburn | NY 64718 91455 | 21.3 |
| 24th feb 2012 | Janus Chairs | NY 6632 90761 | 21.33 |
| 24th feb 2012 | Belling inlet | NY 66235 91122 | 21.3 |
| 24th feb 2012 | Coal yard | NY 69902 88649 | 21.33 |
| 24th feb 2012 | Wainhope bothy | NY 6719792369 | 21.4 |
| 25th feb 2012 | Kielder Observatory | NY 60936 93291 | 22.17 |
| 25th feb 2012 | Gowanburn | NY 64718 91455 | 21.9 |
| 25th feb 2012 | Janus Chairs | NY 6632 90761 | 22.22 |
| 25th feb 2012 | Belling inlet | NY 66235 91122 | 21.9 |
| 25th feb 2012 | Coal yard | NY 69902 88649 | 21.71 |
| 25th feb 2012 | Wainhope bothy | NY 6719792369 | 22.41 |
| 25th feb 2012 | Blackaburn lough | NY 7645 7952 | 21.9 |
| 25th feb 2012 | Pundershaw | NY 7977 8016 | 21.48 |
| 26th feb 2012 | Kielder observatory | NY 60936 93291 | 21.54 |
| 27th feb 2012 | Kielder observatory | NY 60936 93292 | inclement |
| 27th feb 2012 | Kielder observatory | NY 60936 93293 | 22.01 |
| 28th feb 2012 | Kielder observatory | NY 60936 93294 | inclement |
| 28th feb 2012 | Catcleugh | NT 743034 | 21.21 |
| 28th feb 2012 | Byrness school | NT 758028 | 19.92 |
| 28th feb 2012 | Forest Drive Toll | NT 780002 | 20.61 |
| 29th feb 2012 | Catcleugh | NT 743034 | 20.48 |
| 29th feb 2012 | Byrness school | NT 758028 | 19.84 |
| 29th feb 2012 | Forest Drive Toll | NT 780002 | 19.54 |
| 29th feb 2012 | Gowanburn | NY 64718 91455 | 19.5 |
| 29th feb 2012 | Janus Chairs | NY 6632 90761 | 19.54 |
| 29th feb 2012 | Belling inlet | NY 66235 91122 | 19.55 |
| 29th feb 2012 | Coal yard | NY 69902 88649 | 19.26 |
| 29th feb 2012 | Wainhope bothy | NY 6719792369 | 19.88 |
| 1st march 2012 | Catcleugh | NT 743034 | 19.95 |
| 1st march 2012 | Byrness school | NT 758028 | 19.21 |
| 1st march 2012 | Forest Drive Toll | NT 780002 | 19.81 |
| 3rd march 2012 | Kielder Observatory | NY 60936 93294 | 20.87 |
| 4th march 2012 | Kielder Observatory | NY 60936 93295 | 21.89 |

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|-----------------|---------------------|----------------|-----------|
| 5th march 2012 | Kielder Observatory | NY 60936 93296 | Inclement |
| 6th march 2012 | Kielder Observatory | NY 60936 93297 | Inclement |
| 7th march 2012 | Kielder Observatory | NY 60936 93298 | Inclement |
| 8th march 2012 | Kielder Observatory | NY 60936 93299 | Inclement |
| 9th march 2012 | Kielder Observatory | NY 60936 93300 | Inclement |
| 9th march 2012 | Gowanburn | NY 64718 91455 | 19.3 |
| 9th march 2012 | Janus Chairs | NY 6632 90761 | 19.87 |
| 9th march 2012 | Belling inlet | NY 66235 91122 | 20 |
| 9th march 2012 | Coal yard | NY 69902 88649 | 19.26 |
| 9th march 2012 | Wainhope bothy | NY 6719792369 | 20.5 |
| 12th march 2012 | Blackaburn lough | NY 7645 7952 | 22.64 |
| 12th march 2012 | Pundershaw | NY 7977 8016 | 22.68 |
| 12th march 2012 | Kielder Observatory | NY 60936 93294 | 21.99 |
| 13th march 2012 | 7 Linns | NY 6867 8012 | 20.47 |
| 13th march 2012 | Hopehouse | NY 6891 8064 | 21.31 |
| 13th march 2012 | Lord robinson | NY 6746 8117 | 20.58 |
| 13th march 2012 | Chirdon Head | NY 7127 8189 | 21.03 |
| 15th march 2012 | Blackaburn lough | NY 7645 7952 | 22.04 |
| 15th march 2012 | Pundershaw | NY 7977 8016 | 21.7 |
| 15th march 2012 | Kielder Observatory | NY 60936 93300 | 21.45 |
| 16th march 2012 | Gowanburn | NY 64718 91455 | 21.7 |
| 16th march 2012 | Janus Chairs | NY 6632 90761 | 21.7 |
| 16th march 2012 | Belling inlet | NY 66235 91122 | 21.35 |
| 16th march 2012 | Coal yard | NY 69902 88649 | 21.9 |
| 16th march 2012 | Wainhope bothy | NY 6719792369 | 21.95 |
| 16th march 2012 | Blackaburn lough | NY 7645 7952 | 22.32 |
| 16th march 2012 | Pundershaw | NY 7977 8016 | 22.08 |
| 17th march 2012 | Gowanburn | NY 64718 91455 | 21.3 |
| 17th march 2012 | Janus Chairs | NY 6632 90761 | 21.36 |
| 17th march 2012 | Belling inlet | NY 66235 91122 | 20.9 |
| 17th march 2012 | Coal yard | NY 69902 88649 | 22.1 |
| 17th march 2012 | Wainhope bothy | NY 6719792369 | 22 |
| 17th march 2012 | Kielder Observatory | NY 60936 93300 | 21.87 |

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|-----------------|---------------------|----------------|-----------|
| 18th march 2012 | Kielder Observatory | NY 60936 93301 | inclement |
| 18th march 2012 | Gowanburn | NY 64718 91455 | 21.5 |
| 18th march 2012 | Janus Chairs | NY 6632 90761 | 21.65 |
| 18th march 2012 | Belling inlet | NY 66235 91122 | 21.3 |
| 18th march 2012 | Coal yard | NY 69902 88649 | 22.1 |
| 18th march 2012 | Wainhope bothy | NY 6719792369 | 22.25 |
| 19th march 2012 | 7 Linns | NY 6867 8012 | 22.53 |
| 19th march 2012 | Hopehouse | NY 6891 8064 | 21.87 |
| 19th march 2012 | Lord robinson | NY 6746 8117 | 22.04 |
| 19th march 2012 | Chirdon Head | NY 7127 8189 | 21 |
| 19th march 2012 | Kielder Observatory | NY 60936 93300 | 20.12 |
| 20th march 2012 | Kielder Observatory | NY 60936 93301 | 22.15 |
| 20th march 2012 | 7 Linns | NY 6867 8012 | 21.68 |
| 20th march 2012 | Hopehouse | NY 6891 8064 | 22.01 |
| 20th march 2012 | Lord robinson | NY 6746 8117 | 20.01 |
| 20th march 2012 | Chirdon Head | NY 7127 8189 | 20.78 |
| 21st march 2012 | Kielder Observatory | NY 60936 93301 | inclement |
| 21st march 2012 | Blackaburn lough | NY 7645 7952 | 21.08 |
| 21st march 2012 | Pundershaw | NY 7977 8016 | 21.4 |
| 22nd march 2012 | Pundershaw | NY 7977 8017 | 22.08 |
| 22nd march 2012 | Kielder Observatory | NY 60936 93301 | 22.34 |
| 22nd march 2012 | Blackaburn lough | NY 7645 7952 | 21.42 |
| 22nd march 2012 | 7 Linns | NY 6867 8012 | 20.64 |
| 22nd march 2012 | Hopehouse | NY 6891 8064 | 21.24 |
| 22nd march 2012 | Lord robinson | NY 6746 8117 | 21.28 |
| 22nd march 2012 | Chirdon Head | NY 7127 8189 | 21.2 |
| 22nd march 2012 | coldstore | NY 72094 88392 | 21.51 |
| 22nd march 2012 | crawberry craggs | NY 71371 90731 | 21.44 |
| 22nd march 2012 | The cross | NY 71371 90731 | 20.92 |
| 23rd march 2012 | Kielder Observatory | NY 60936 93301 | 22.67 |
| 23rd march 2012 | coldstore | NY 72094 88392 | 21.55 |
| 23rd march 2012 | crawberry craggs | NY 71371 90731 | 21.73 |
| 23rd march 2012 | The cross | NY 71371 90731 | 20.25 |

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|-----------------|---------------------|----------------|-------|
| 24th march 2012 | Kielder Observatory | NY 60936 93301 | 22.09 |
| 24th march 2012 | Blackaburn lough | NY 7645 7952 | 21.9 |
| 24th march 2012 | Pundershaw | NY 7977 8017 | 22.1 |
| 24th march 2012 | coldstore | NY 72094 88392 | 21.52 |
| 24th march 2012 | crawberry craggs | NY 71371 90731 | 21.46 |
| 24th march 2012 | The cross | NY 71371 90731 | 21.43 |
| 24th march 2012 | The cross | NY 71371 90732 | 21.69 |
| 25th march 2012 | The cross | NY 71371 90733 | 21.82 |
| 25th march 2012 | Kielder observatory | NY 60936 93301 | 22.31 |
| 25th march 2012 | coldstore | NY 72094 88392 | 21.06 |
| 25th march 2012 | crawberry craggs | NY 71371 90731 | 21.47 |
| 26th march 2012 | crawberry craggs | NY 71371 90732 | 21.56 |
| 26th march 2012 | Kielder observatory | NY 60936 93301 | 21.97 |
| 26th march 2012 | coldstore | NY 72094 88392 | 21.48 |
| 26th march 2012 | The cross | NY 71371 90733 | 21.7 |
| 27th march 2012 | Kielder observatory | NY 60936 93301 | 22.01 |
| 27th march 2012 | coldstore | NY 72094 88392 | 21.56 |
| 27th march 2012 | crawberry craggs | NY 71371 90732 | 21.49 |
| 27th march 2012 | The cross | NY 71371 90733 | 20.08 |
| 27th march 2012 | 7 Linns | NY 6867 8012 | 22.15 |
| 27th march 2012 | Hopehouse | NY 6891 8064 | 22.35 |
| 27th march 2012 | Lord robinson | NY 6746 8117 | 21.13 |
| 27th march 2012 | Chirdon Head | NY 7127 8189 | 22.45 |
| 28th march 2012 | Chirdon Head | NY 7127 8190 | 21.13 |
| 28th march 2012 | Kielder Observatory | NY 60936 93301 | 21.78 |
| 28th march 2012 | Kielder Observatory | NY 60936 93302 | 22.1 |
| 28th march 2012 | coldstore | NY 72094 88392 | 21.47 |
| 28th march 2012 | The cross | NY 71371 90733 | 20.88 |
| 28th march 2012 | 7 Linns | NY 6867 8012 | 21.7 |
| 28th march 2012 | Hopehouse | NY 6891 8064 | 21.3 |
| 28th march 2012 | Lord robinson | NY 6746 8117 | 21.78 |
| 28th march 2012 | Chirdon Head | NY 7127 8189 | 21.13 |
| | | | |

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|-----------------|-----------------------|----------------|-------|
| Late readings | | | |
| 24th feb 2012 | butteryhaugh bridge | NY 63224 92289 | 21.65 |
| 24th feb 2012 | Kielder castle | NY 63197 93456 | 21.53 |
| 24th feb 2012 | Kielder campsite | NY 62790 93803 | 21.45 |
| 24th feb 2012 | C200 at border | NY 56819 98107 | 21.56 |
| 24th feb 2012 | Klerseycleugh-lay-bye | NY 56819 98107 | 21.49 |
| 16th march 2012 | butteryhaugh bridge | NY 63224 92289 | 21.66 |
| 16th march 2012 | Kielder castle | NY 63197 93456 | 21.91 |
| 16th march 2012 | Kielder campsite | NY 62790 93803 | 22.57 |
| 16th march 2012 | Klerseycleugh-lay-bye | NY 56819 98107 | 21.85 |
| 16th march 2012 | C200 at border | NY 56819 98107 | 21.8 |
| 17th march 2012 | butteryhaugh bridge | NY 63224 92289 | 21.67 |
| 17th march 2012 | Kielder castle | NY 63197 93456 | 21.68 |
| 17th march 2012 | Kielder campsite | NY 62790 93803 | 21.78 |
| 17th march 2012 | C200 at border | NY 56819 98107 | 21.8 |
| 17th march 2012 | Klerseycleugh-lay-bye | NY 56819 98107 | 22.45 |
| 21st march 2012 | butteryhaugh bridge | NY 63224 92289 | 21.66 |
| 21st march 2012 | kielder castle | NY 63197 93456 | 22.24 |
| 21st march 2012 | Kielder campsite | NY 62790 93803 | 21.72 |
| 21st march 2012 | C200 at border | NY 56819 98107 | 21.76 |
| 21st march 2012 | Klerseycleugh-lay-bye | NY 56819 98107 | 21.74 |
| 22nd march 2012 | butteryhaugh bridge | NY 63224 92289 | 22.42 |
| 22nd march 2012 | Kielder castle | NY 63197 93456 | 22.74 |
| 22nd march 2012 | Kielder campsite | NY 62790 93803 | 21.84 |
| 22nd march 2012 | C200 at border | NY 56819 98107 | 21.78 |
| 22nd march 2012 | Klerseycleugh-lay-bye | NY 56819 98107 | 21.76 |

Average site specific readings

| | |
|---------------------|-------|
| Kielder observatory | 21.93 |
| catcleugh | 21.38 |
| Byrness school | 20.61 |

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|---------------------|-------|
| Forest drive toll | 21.3 |
| 7 linns | 21.53 |
| Hopehouse | 21.76 |
| Lord robinson | 21.13 |
| Chirdon head | 21.23 |
| Coldstore | 21.44 |
| Craw craggs | 21.52 |
| The cross | 21.13 |
| blackaburn lough | 21.9 |
| Pundershaw | 22 |
| Gowan burn | 20.92 |
| Janus chairs | 21.09 |
| Belling inlet | 20.9 |
| Coal yard | 21.09 |
| wainhope bothy | 21.48 |
| butteryhaugh bridge | 21.81 |
| Kielder castle | 22.02 |
| Kielder campsite | 21.87 |
| c200 border | 21.74 |
| Kerseycleugh | 21085 |

the amount of light pollution per arc second of the sky. This standard that does suggest we have good dark sky conditions

onstrate that the local and surrounding areas as designated are *above and beyond to preserve that night sky. That is, these locations* are in the waning gibbous phase.

temperature fluctuations were noted but were thought to be

summer Milky Way; distinctly yellowish zodiacal light bright star clusters still distinct naked-eye objects. My observations can

153.3