Wokingham Meteorological Data

Wokingham Climatological Station, Emmbrook, Berkshire.

Annual Report and Introduction, 2008

1. A copy of this report will be placed on the Wokingham Weather web site at www.woksat.info/wwp4.html.

2. Details of the site, instrumentation and publications can be found in the appendix to this annual report.

3. During 2008, a full and complete program of daily climatological observations has been carried out, completing the 33rd year of continuous climatological record for Wokingham. In addition to the daily climatological observations taken at 0900 GMT each day, full synoptic observations have been made each day at 0900 and 1500 GMT throughout the year.

4. The records are tabulated and archived by the Hon. Met. Officer, who has made most of the observations. During absences data from the Automatic Weather Station (AWS) have been used. All the observations are quality controlled and a high standard of accuracy is achieved. Checks are periodically made against spare instruments at the station, as well as comparisons with the data for other stations in the area. In addition to a hand-written log, the data is processed and stored on a home PC.

5. The Town Council have, each month during 2008, been provided with a report entitled Monthly Means and Totals. (For details see appendix). A copy of this report, together with computer generated graphs of temperature, rainfall, sunshine, pressure and wind, were provided to the Town Hall Information Office for dissemination and display. Copies of these, together with, in some cases, a printout of the full daily climatological log, were also provided to interested parties as required. All the publications are also placed in the reference section of the Wokingham Public Library. The data is also placed on the Wokingham Weather web site at: www.woksat.info/wwp1.html

6. The Wokingham data continues to be published in the Climatological Observers Link, where it appears together with data from numerous other U.K. stations. The Wokingham station is also listed in the Register of Weather Stations published by the Royal Meteorological Society and the University of Stirling. Throughout 2008 monthly returns have been submitted to the Environment Agency for onward transmission to the Met. Office. The new weather station site at the Emmbrook Junior School was last inspected by the Met Office and Environment Agency inspectors on the 26th June 2007.

7. This is the second full year of operation at the new site and no problems have been encountered. The majority of the data show a high degree of continuity with that from the old site, with the sole exception of the 1 metre earth temperature, which continues to give values between 0.4C (winter) and 1.0C (summer) higher than at the old site. At present a correction table is being used to bring the 1m temperatures values into line with the old site. It may be necessary to find a new locaion for the 1m thermometer at some time in the future.

8. Feb 16th to 20th, power to the Munro anemograph was off during contractors work at the secondary school, resulting in loss of the record. However, the sonic anemometer at Cantley Crescent has been the primary source of wind data since the school flooding in 2007, so the climatological wind record has not been compromised. Feb 28th, a new version of processing software for the AWS uploaded, including a +0.15C calibration correction to the air trmperature sensor. June 26th, following repeated damage by birds to the radiation shield of the grass minimum thermometer, the expansion chamber end has been painted black, to serve the same purpose.

9. A lease for the new weather station site was received from the Wokingham Borough Council by the Town Clerk in August 2007, giving us security of tenure for at least five years.

10. As in the past, the Hon. Met. Officer would like to thank all those who have made possible the continuation of this project. Special thanks go to the Mayor of Wokingham and other members of the Town Council for there solid support, and especially to the Town Clerk, Mr K Abnett, who has proved his willingness to help. Special thanks must go to Mr Paul Rowe, headmaster of Emmbrook Junior School, in whose grounds the climatological station is situated, and thanks too to the other staff and the caretaker, who have given wholehearted support during the year. Thanks also to Mr A Matthias, the headmaster of Emmbrook School, who has expressed his support for the continued presence of the anemometer and anemograph at the school.

11. Finally, it is planned to continue the Met Project at the new site, in its present form, throughout 2009, adding the 34th year to the Wokingham Climatological Record.

B J Burton. FRMetS. Hon. Met. Officer to Wokingham Town Council.
January 2009

Appendix 1.

The Old Climatological Site closed in September 2006. Details of that site may be found in past Annual Introductions.

The New Wokingham Climatological Site: is located about 350 m Northwest of the old site, in the grounds of The Emmbrook Junior School, Emmbrook Road, Wokingham. The National Grid Reference is (SU) 4,7985 1,7013. The Latitude is 51.4245 degrees North, Longitude 0.8530 degrees West. The altitude of the station raingauge is 44 metres above mean sea level. The site is positioned on a grassed area sloping gently towards the east, where a normally shallow stream, the Emm, flows. The Emm drains northwards through a shallow valley, with the land rising by about 40 metres within 1 km to both the east and west. The site is enclosed by an open chain link fence. The soil at the site is basically a mixed topsoil, probably put there at the time the school was built, with black clay at about 80 cm depth. During wet periods the water table rises to the surface and the ground becomes squelchy with water standing on the surface. During prolonged dry periods the ground contracts markedly, and the soil becomes quite dusty. The general character of the site is semi-urban, although it is on the outskirts of the town. Residential housing borders the site in most directions, at a distance varying from 60 m at the closest, and generally more than 150m. The school buildings, mostly single storey, lay from Southeast around to Southwest, and are 14 m from the enclosure at the closest. The maximum local urban fetch is to the Southeast, where the centre of Wokingham lies, and is about 3.5 km. The urban conurbation of Reading is centred 9 km to the Northwest. The exposure of the site is estimated to be slightly more open than the old site. There is obvious shelter to the east where a number of tall poplar trees act as a wind break. The site conforms to the requirements laid down for climatological stations by the Meteorological Office (Observer's Handbook, Met O 805, HMSO). The site has been inspected by the Met Office and Environment Agency. From a limited overlap of readings between the old and new site through July to September 2006, there were no pronounced differences in temperature and rainfall.

Instrumentation and Equipment. An inventory for the Wokingham Climatological Station is given below:

Thermometer screen, louvered, ordinary pattern; One
Thermometer screen, louvered, large pattern: One
Thermometer, minimum, alcohol in glass, index, sheathed; Four
Thermometer, maximum, mercury in glass, restriction, sheathed; Two
Thermometer, ordinary, mercury in glass, sheathed; Three
Thermometer, electronic, with data logger (TinyTag); *Four*
*Thermograph, bi-metallic, weekly clock; One
Raingauge, 5 in, Met O Mk2 pattern; Two
Glass rain measure, millimetre graduation: Two
Raingauge, autographic, tilting siphon, MO Mk2; One

Campbell Scientific automatic weather station, comprising CR10X data logger, HMP45 Temperature and humidity probe, Gill aspirated radiation shield, T107 thermistor probe, Heated tipping bucket raingauge, CS100 Setra barometric pressure sensor, Cs-GSM dual band transceiver, Cables and transformers, Associated software. Electronic anemograph, (2 sets), comprising: Anemometer cup generator Mk4, (2), Wind vane, Mk 4g (2); Power supply unit, 240V input, 110V and 55V output; Power supply unit, 240V input, 240V and 50V output; 7 core armoured cable, 100 metres; 8 metre mast, fittings and fixtures; Anemograph. Recorder, (2), plus assorted spares.

Other instruments, deployed at Cantley Crescent: Barometer, mercury, Kew pattern; One. *Microbarograph, weekly clock, Casella*; One. *Hail Pad, aluminium foil*; One. *Electronic sunshine recorder, R&D, with Pico AD converter and software*; One. Associated PC; One. *WindSonic anemometer;* One. Associated PC; One. * Instruments marked thus were taken out of use during 2005. The earth thermometers used at the old station have been replaced by electronic probes at the new one.

With the exception of those in italics, the instruments conform to the standards laid down by the Meteorological Office. Most of the thermometers have a British Standards Institution certificate, or a Met Office test lab certificate. The TinyTag probes have been calibrated at home against freezing distilled water. The anemometer and wind vane are mounted on the 8 metre mast sited on top of the flat roof of the 2 storey school building at the old site. The exposure is at a height of 15 metres above ground, and the effective height is 10 metres, the international standard height for surface wind measurement. The Sonic anemometer is mounted 5 m above a pitched roof, and 9 m above ground.

The Readings: are taken each day at 0900 GMT during both summer and winter. From the thermometers in the louvered screen, exposed at a height of 1.2 metres above ground, values of dry bulb and wet bulb temperature, and maximum and minimum temperature since 0900 GMT the previous day, are obtained. Also read is the overnight minimum temperature at grass tip level and the total precipitation since 0900 GMT the previous day. The electronic thermometers, anemograph, microbarograph, autographic raingauge, psychrometer, sunshine recorder and instruments attached to the AWS maintain a continuous record of air, grass, and earth temperature, wind, pressure, precipitation duration and intensity, humidity and sunshine amount. Readings are entered in a written log as well as on the home PC. Data from the AWS is transferred by GSM link to the home PC. WEF August 2007, hourly mean values of both wind direction and speed have been taken from the sonic anemometer. Wind gusts from the Munro are compared with the sonic, and are used if they are more than 2 knots greater. Monthly, seasonal and annual archives of the data is kept on the main PC, with backup on a second hard drive and recorded on CD.

The Reports. Each month a report entitled Monthly Means and Totals is produced for the Wokingham Town Council. This report forms the basis of the town's official meteorological record. The report consists of the means and extremes for the past month of temperature, air, grass minimum, 30 cm earth and 100 cm earth, and of rainfall, wind, pressure and sunshine. Totals of rainfall are given, along with duration of measurable rain, and of frost. The number of days with air frost, ground frost, snow falling, snow lying at 0900 GMT, thunder, hail and fog is also listed. Comparisons with the 30 year climatological mean and with longer term values for the area are also given. In a section headed 'Notes' brief details are given of aspects of the past month's weather. A second monthly publication listing all the daily readings, is also produced and is made available to anyone interested. On a seasonal basis, four publications per year entitled Seasonal Means and Totals has a similar format to its monthly counterpart. An annual report, giving a detailed breakdown of the past year's readings, is also published in early January. All the reports can also be accessed from the Wokingham Weather web site, http://woksat.info/wwp.html .

The Archive. Readings at Emmbrook commenced in January 1976, and then consisted of daily rainfall and maximum and minimum air temperature. Grass minimum and 30 cm earth temperatures were added in November 1979. Continuous wind data commenced in December 1987. Earth temperature at 1 metre was added in July 1989. Daily sunshine was added in 1980, but at first consisted of estimated values based on readings taken at Reading University, at Arborfield and at Easthampstead. This was supplemented by data from an experimental electric sunshine recorder from February 1993. Another electronic recorder, R&D, was installed in Jan 1999, and sunshine data is taken solely from this instrument after that date. Rainfall has been measured in the Wokingham area since 1882, and a complete record of monthly totals since that date is held. Meteorological records have been researched, and a comprehensive set of data for the Wokingham area has been assembled. In addition to rainfall, the series lists monthly means of maximum and minimum temperature back to 1882. Extremes of rainfall and temperature from 1904 onwards are listed. Monthly mean sunshine is from 1908. This data set, called the Wokingham Weather Series, has been processed so that the figures may be compared directly with the readings from the Climatological station at Emmbrook.