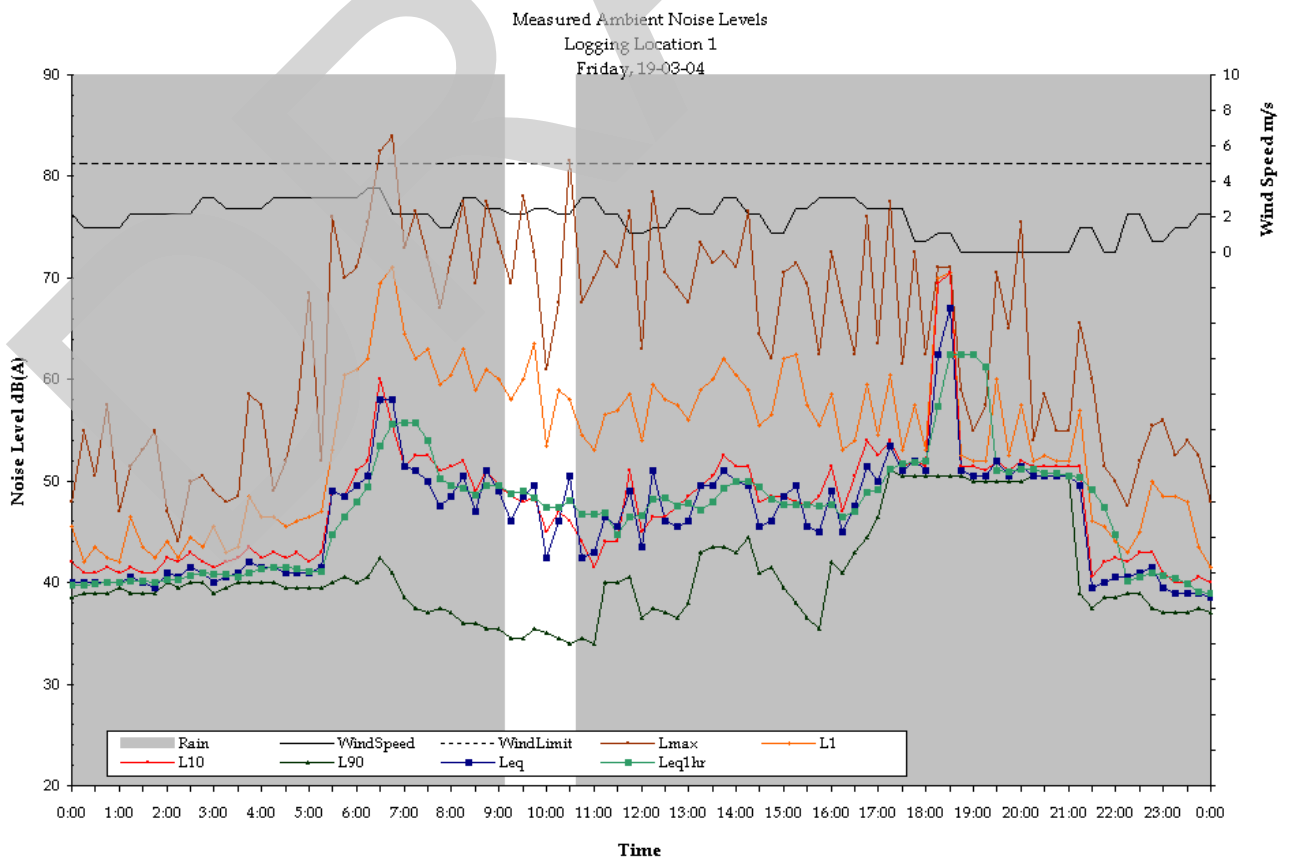
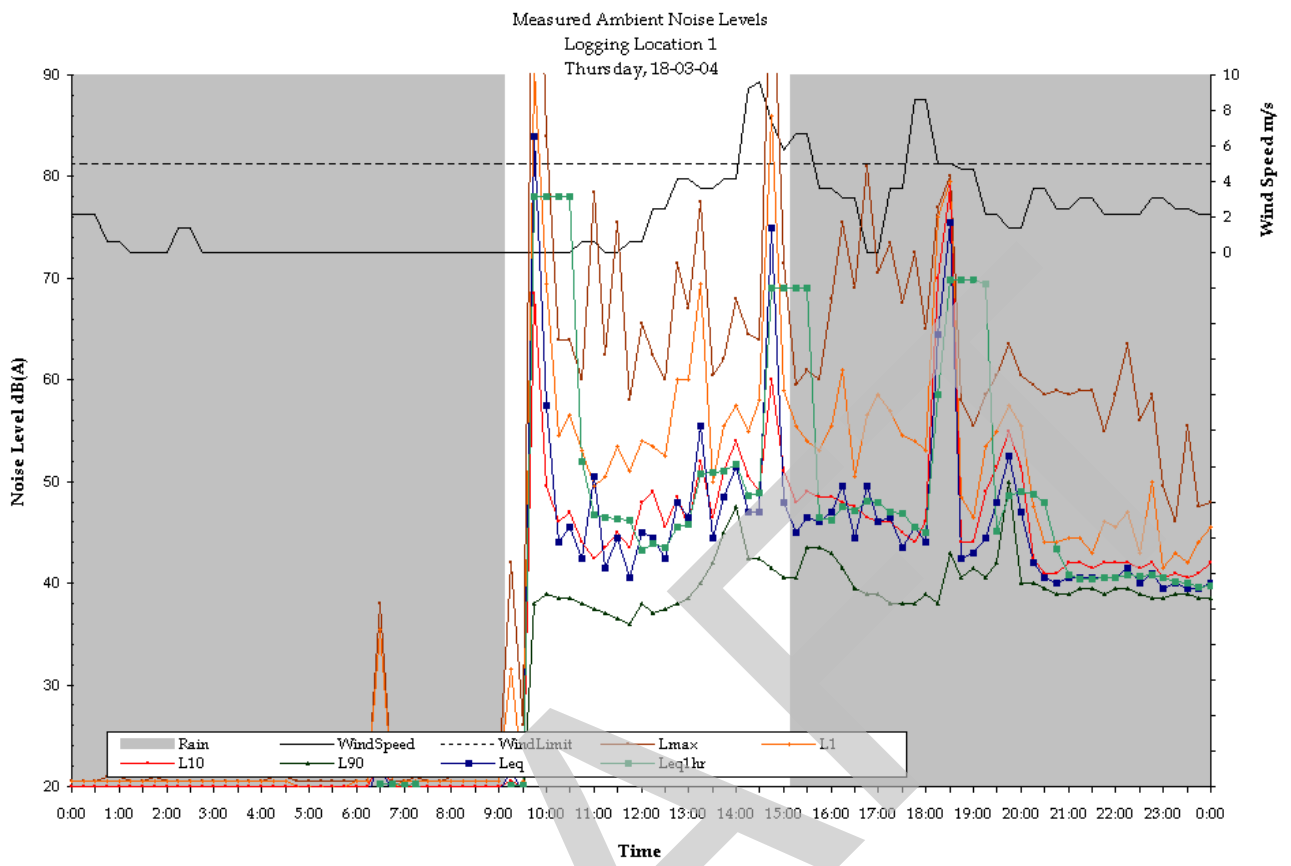


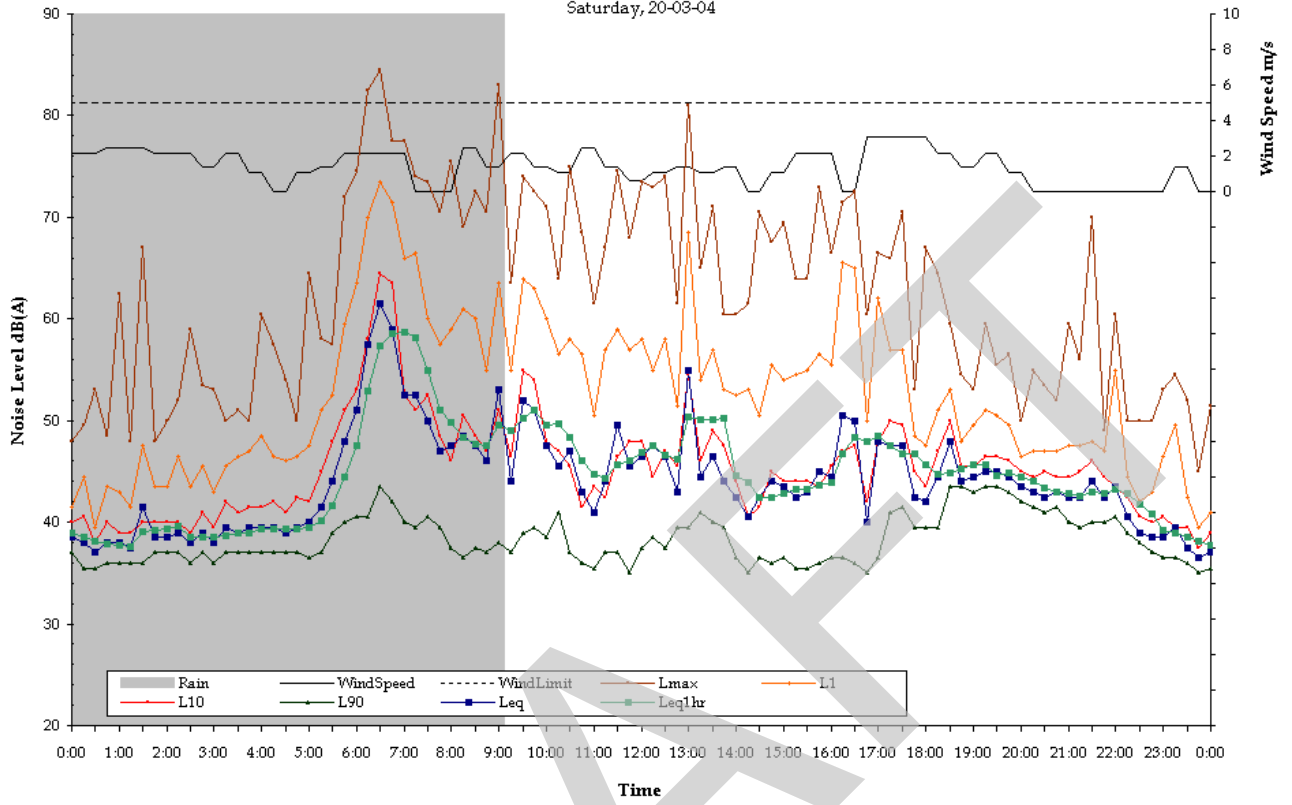
Annex F

Noise Logger Graphs

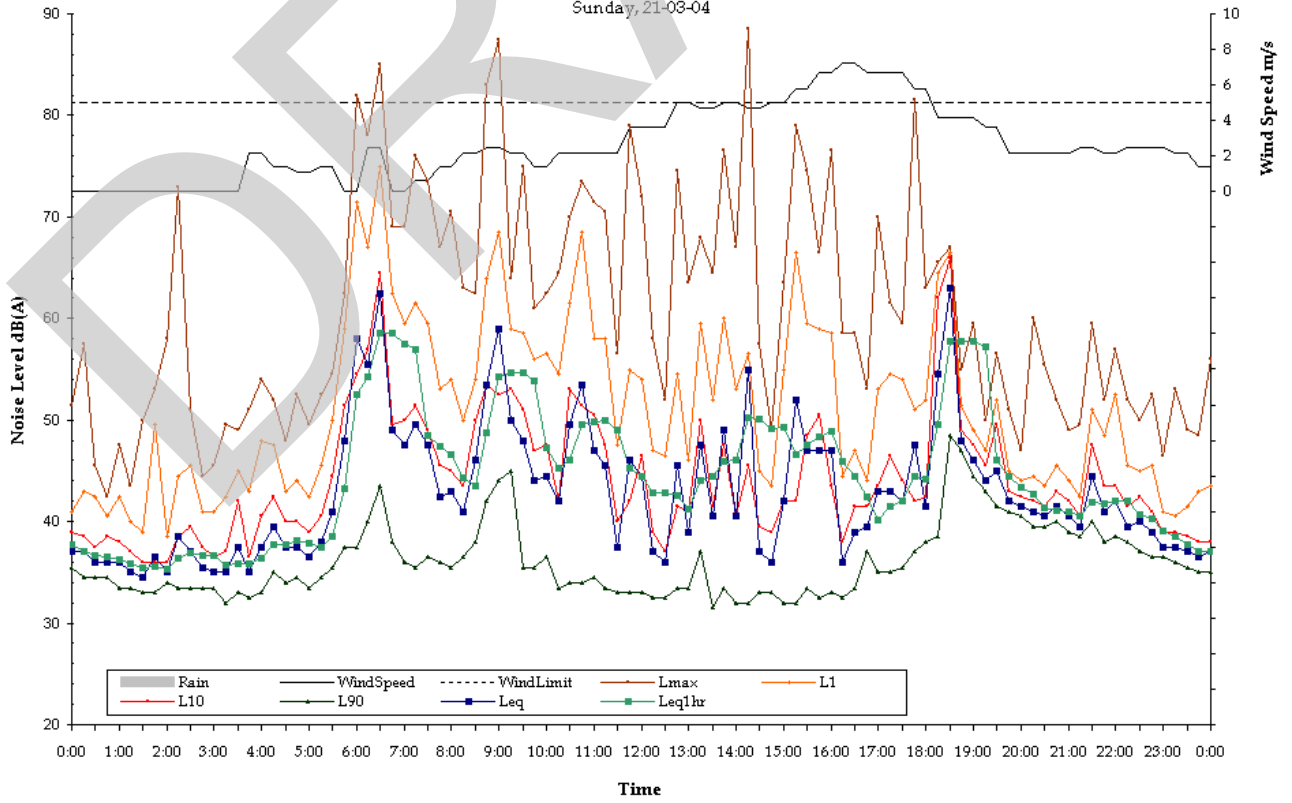
DRAFT

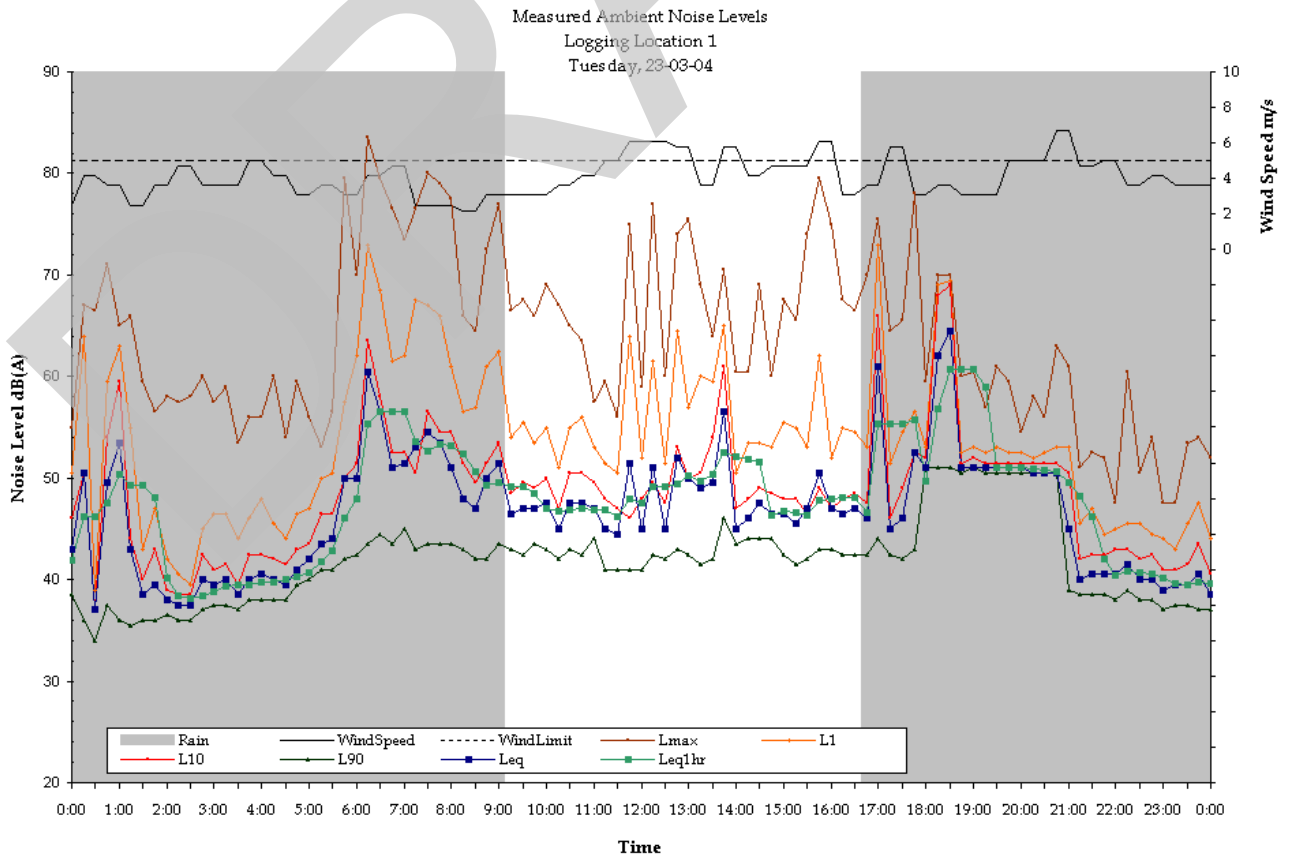
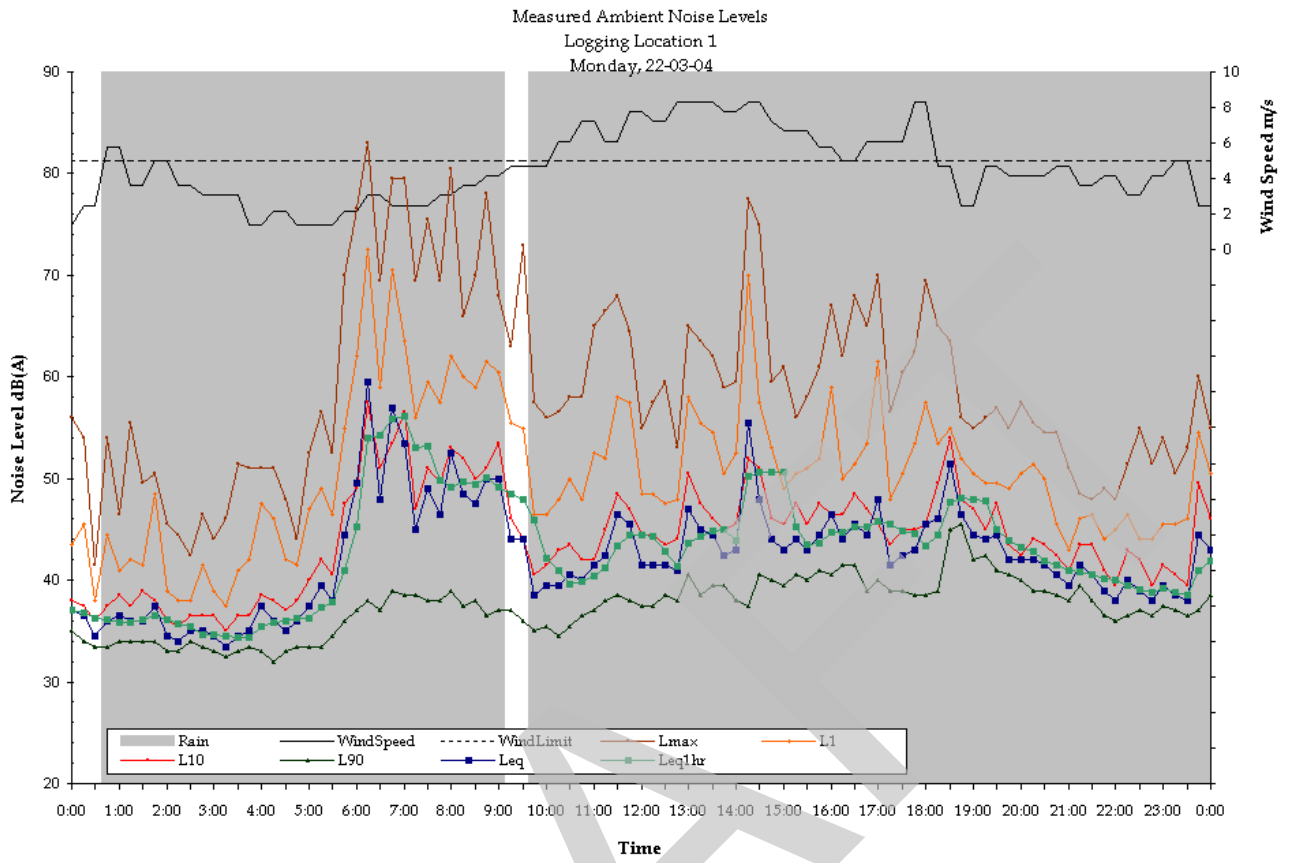


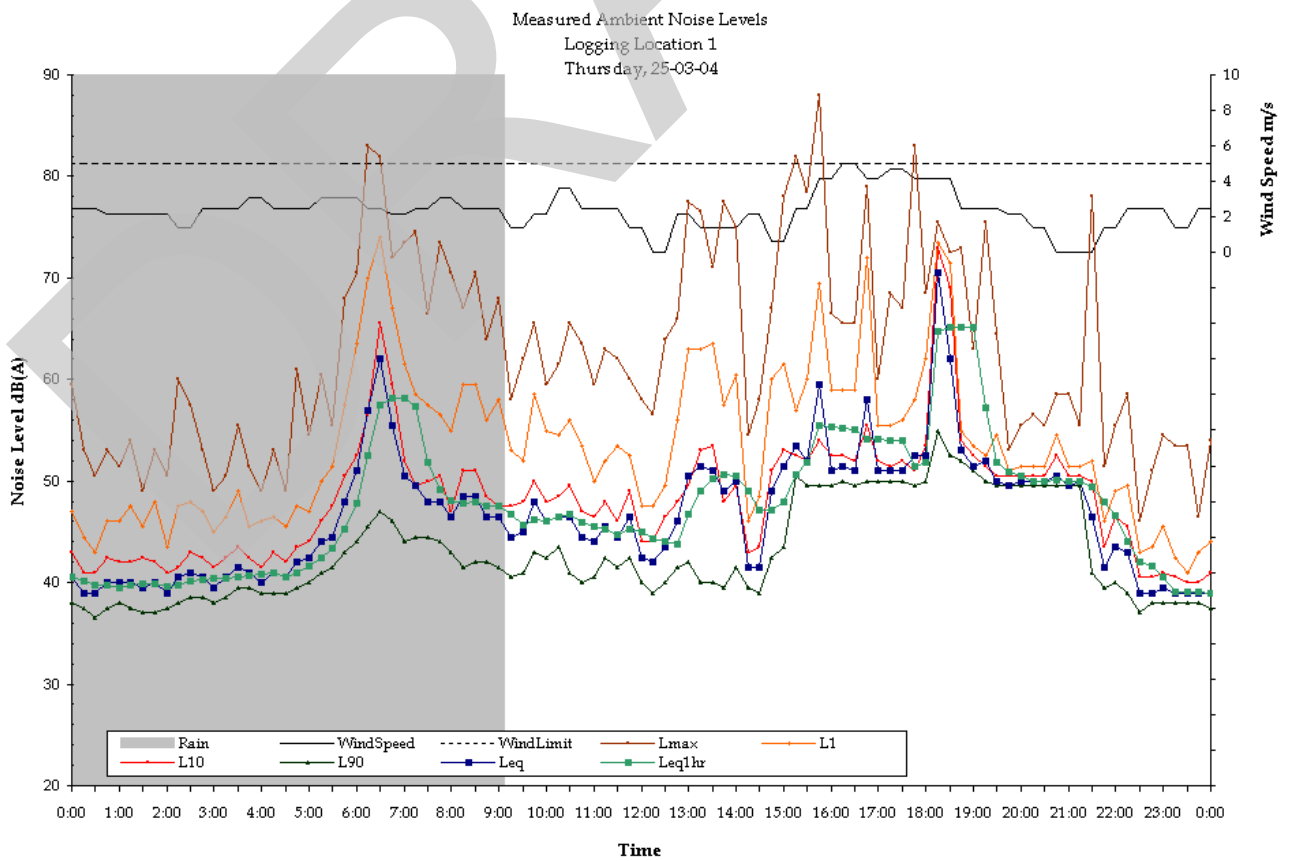
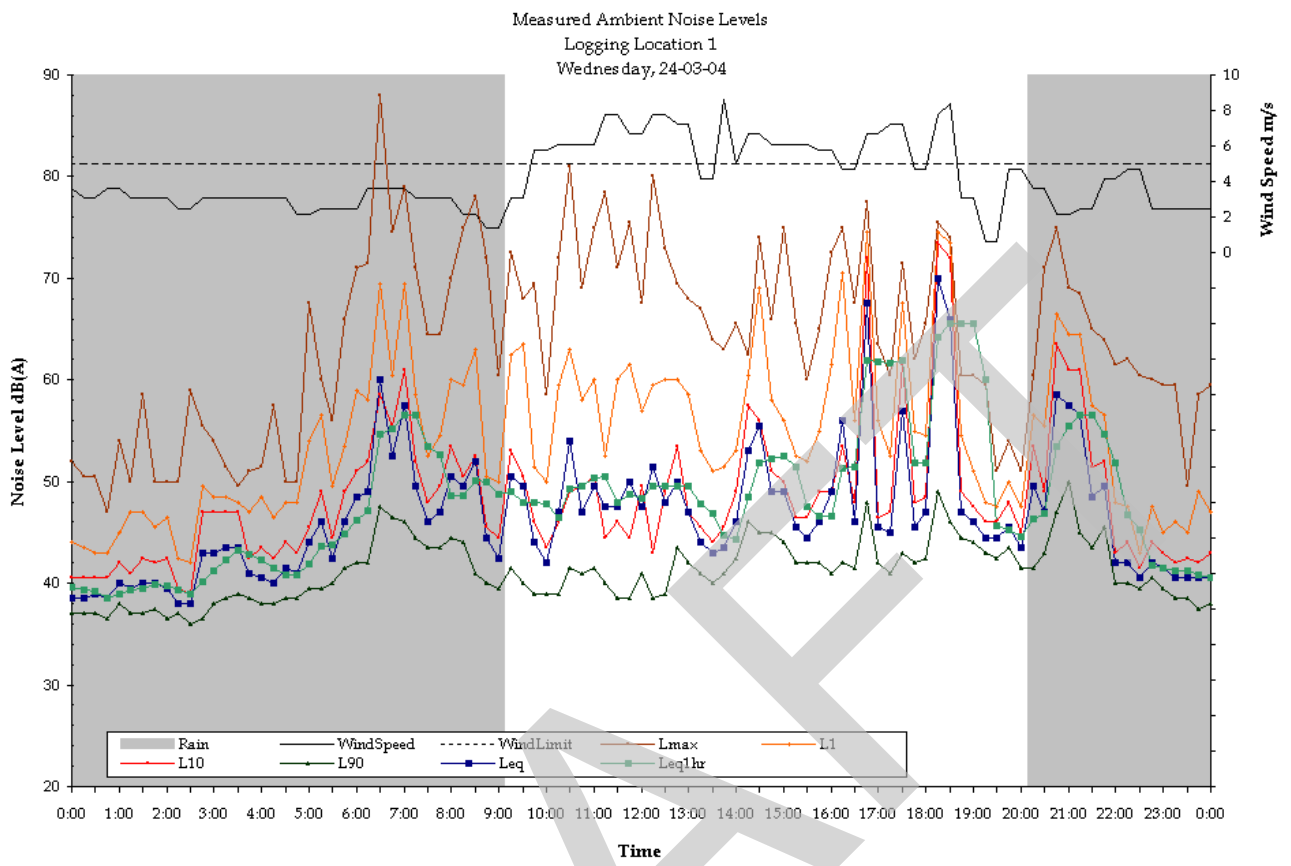
Measured Ambient Noise Levels  
Logging Location 1  
Saturday, 20-03-04



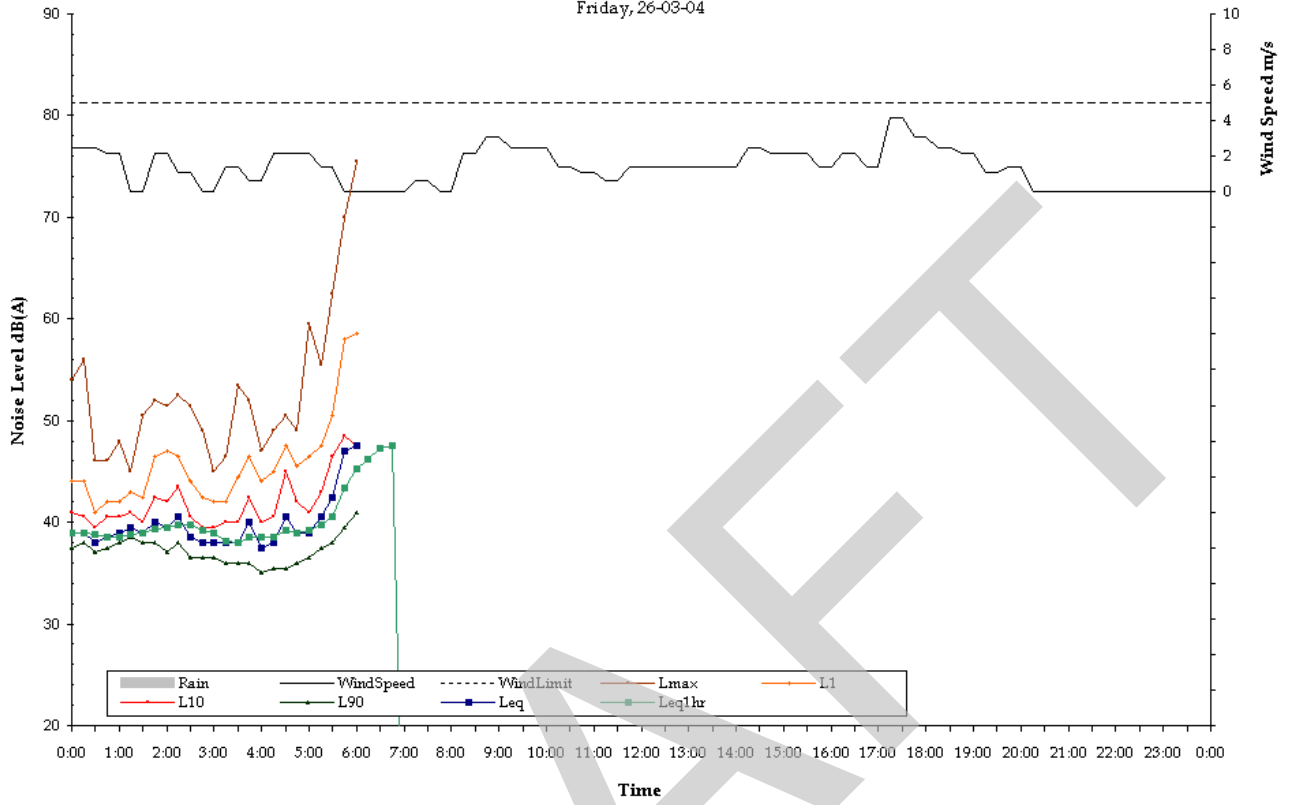
Measured Ambient Noise Levels  
Logging Location 1  
Sunday, 21-03-04

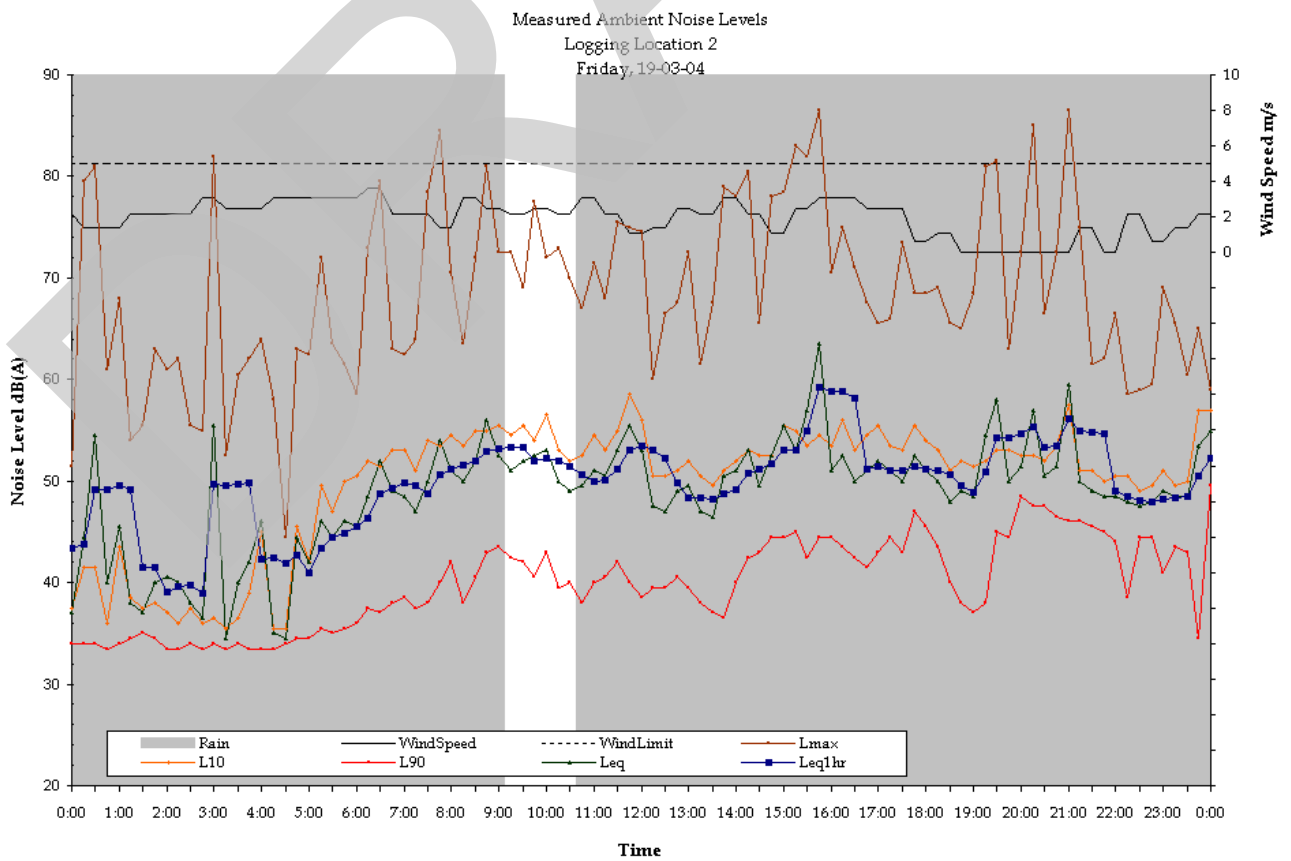
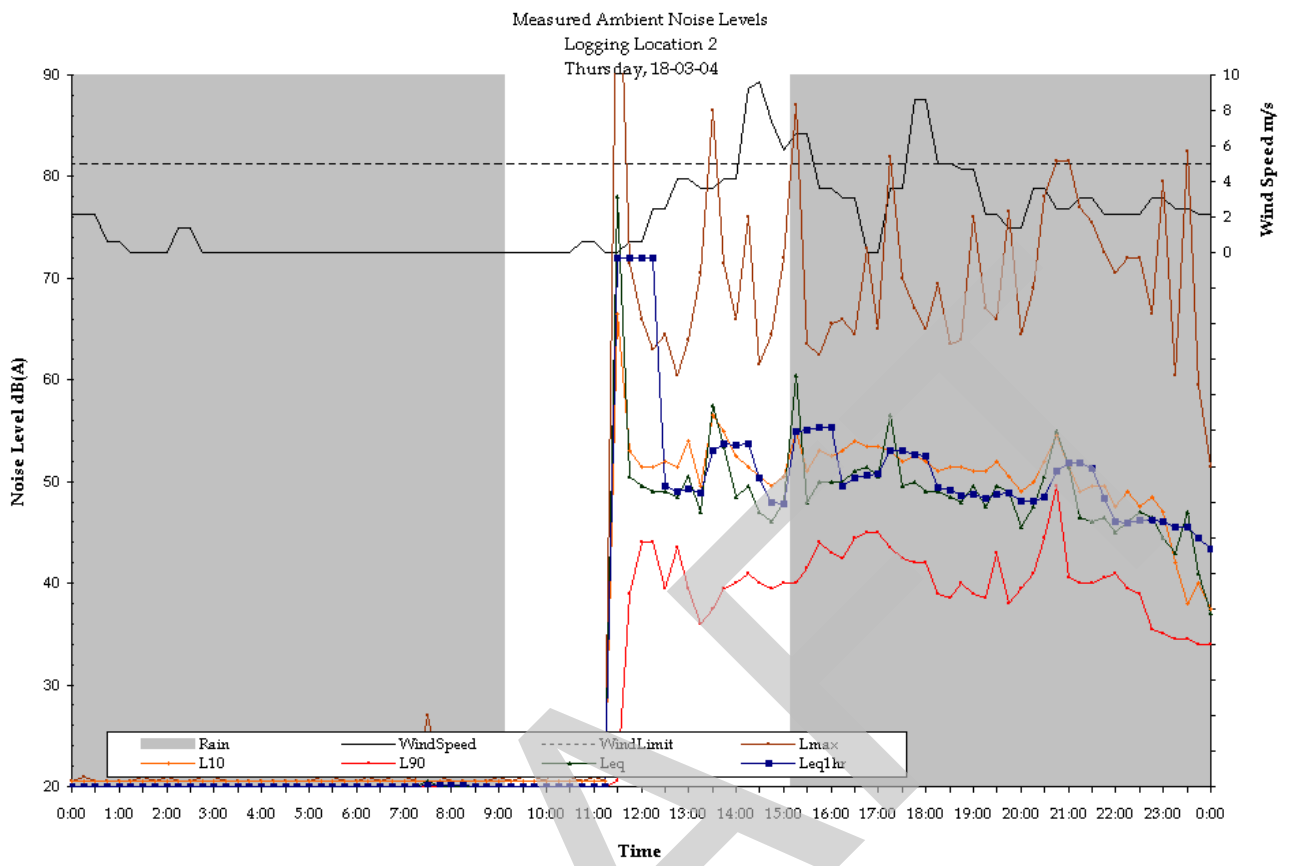




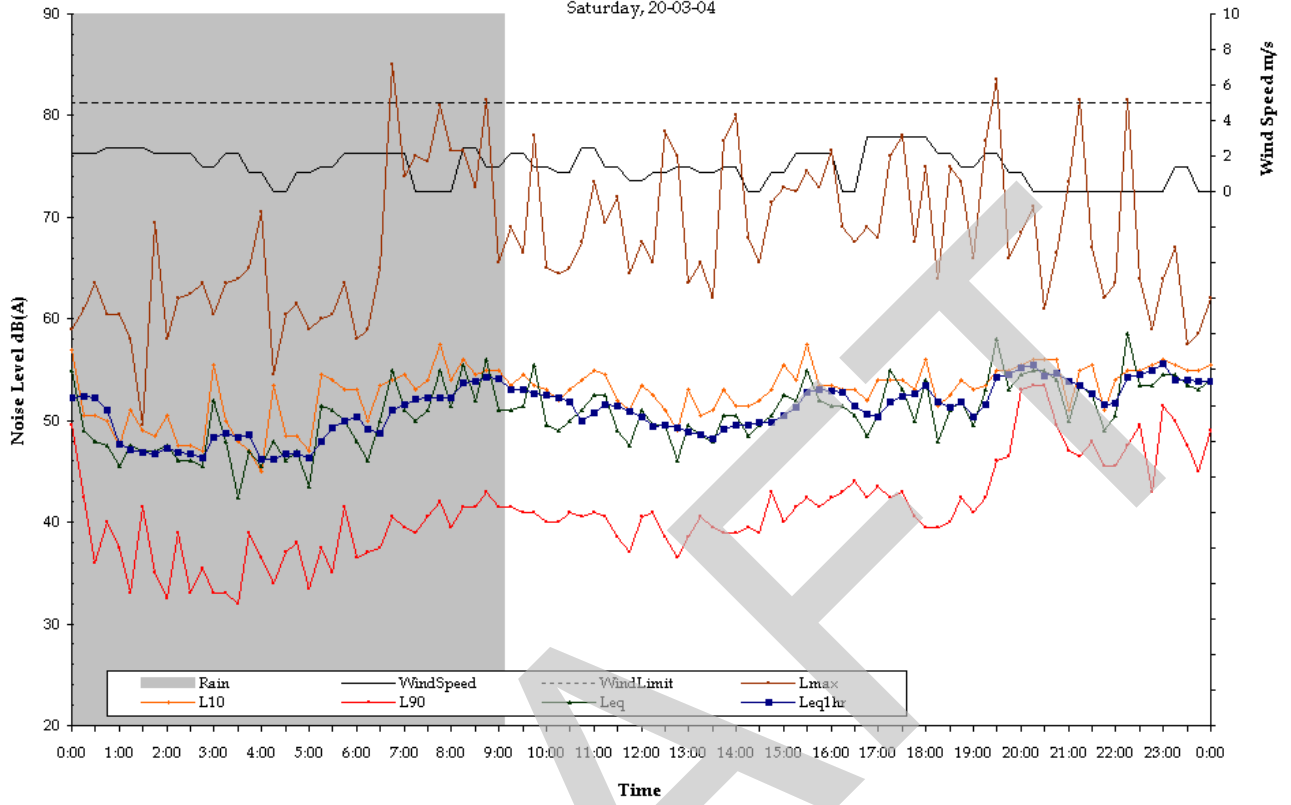


Measured Ambient Noise Levels  
Logging Location 1  
Friday, 26-03-04

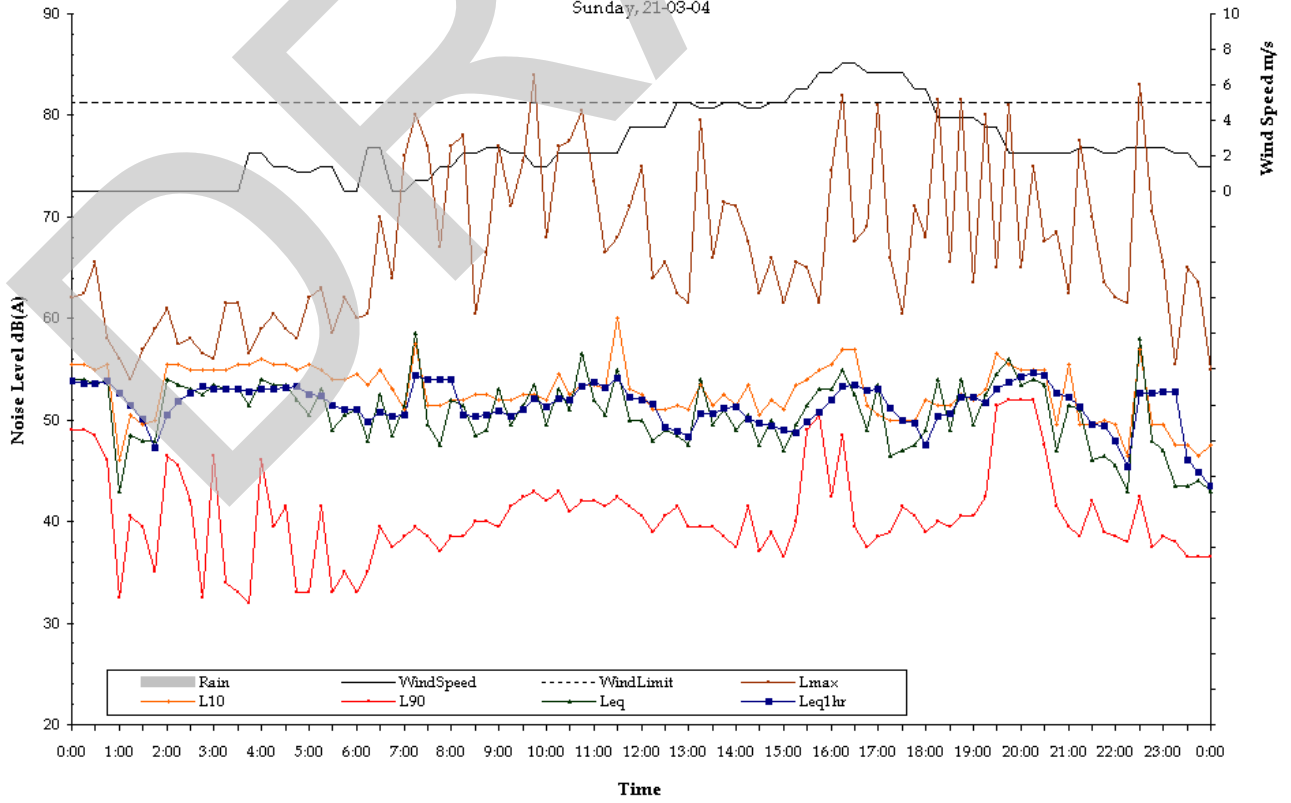




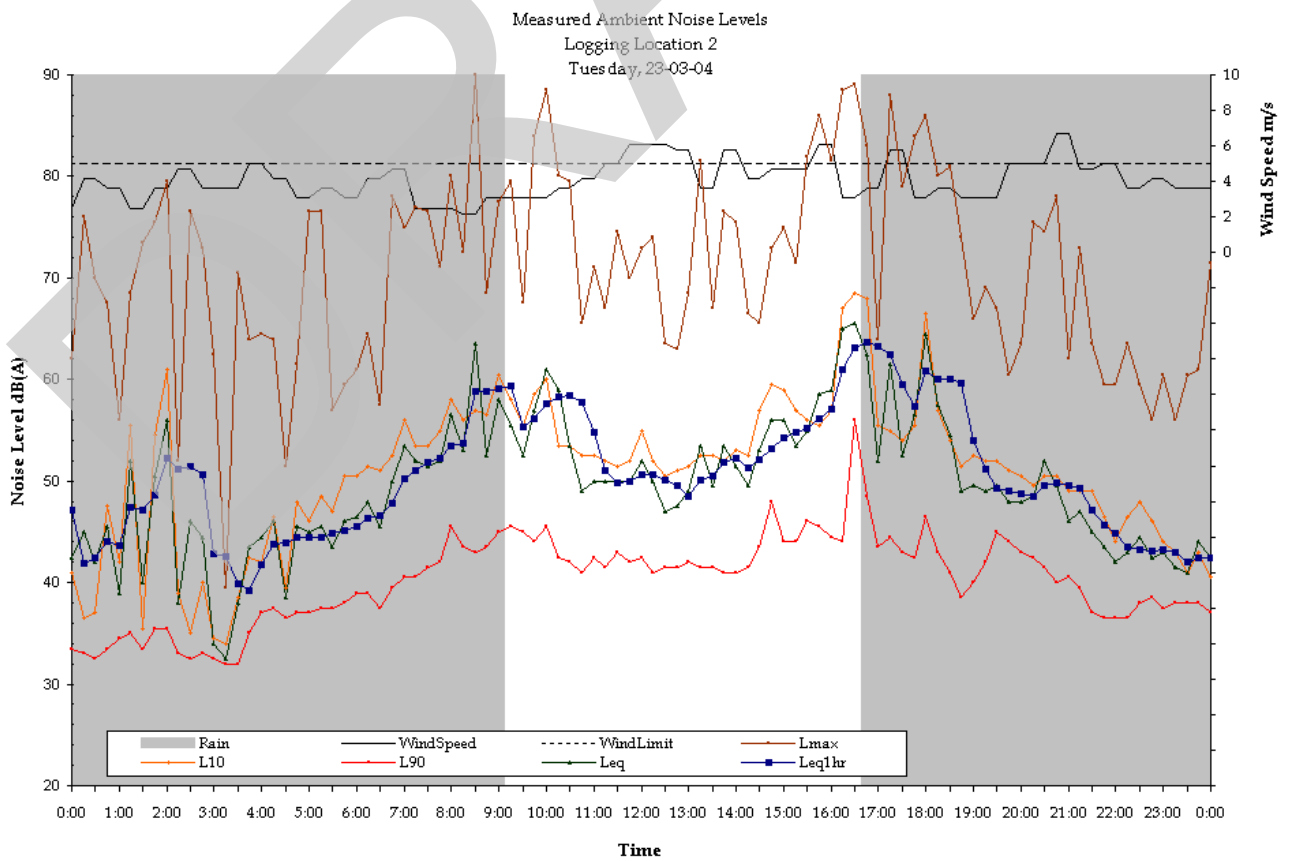
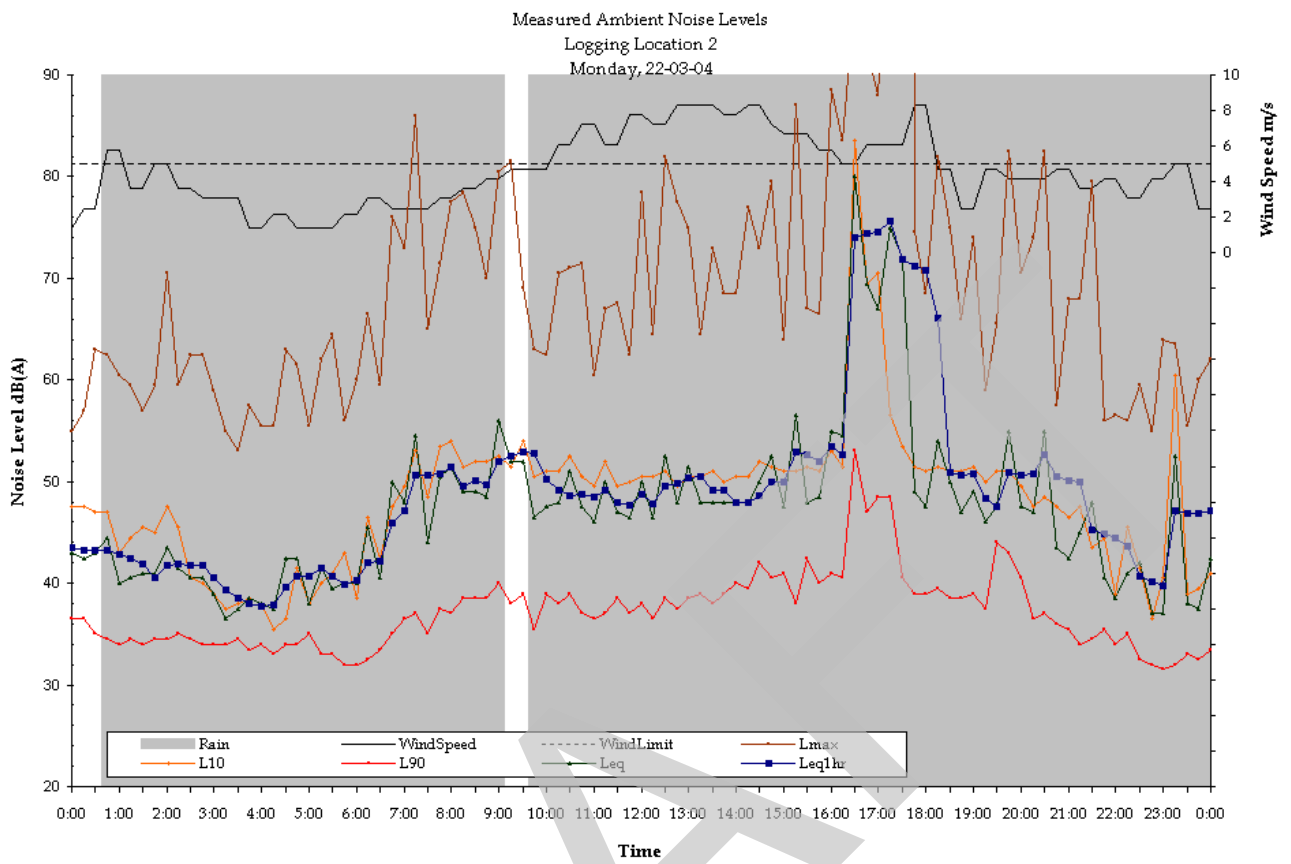
Measured Ambient Noise Levels  
Logging Location 2  
Saturday, 20-03-04

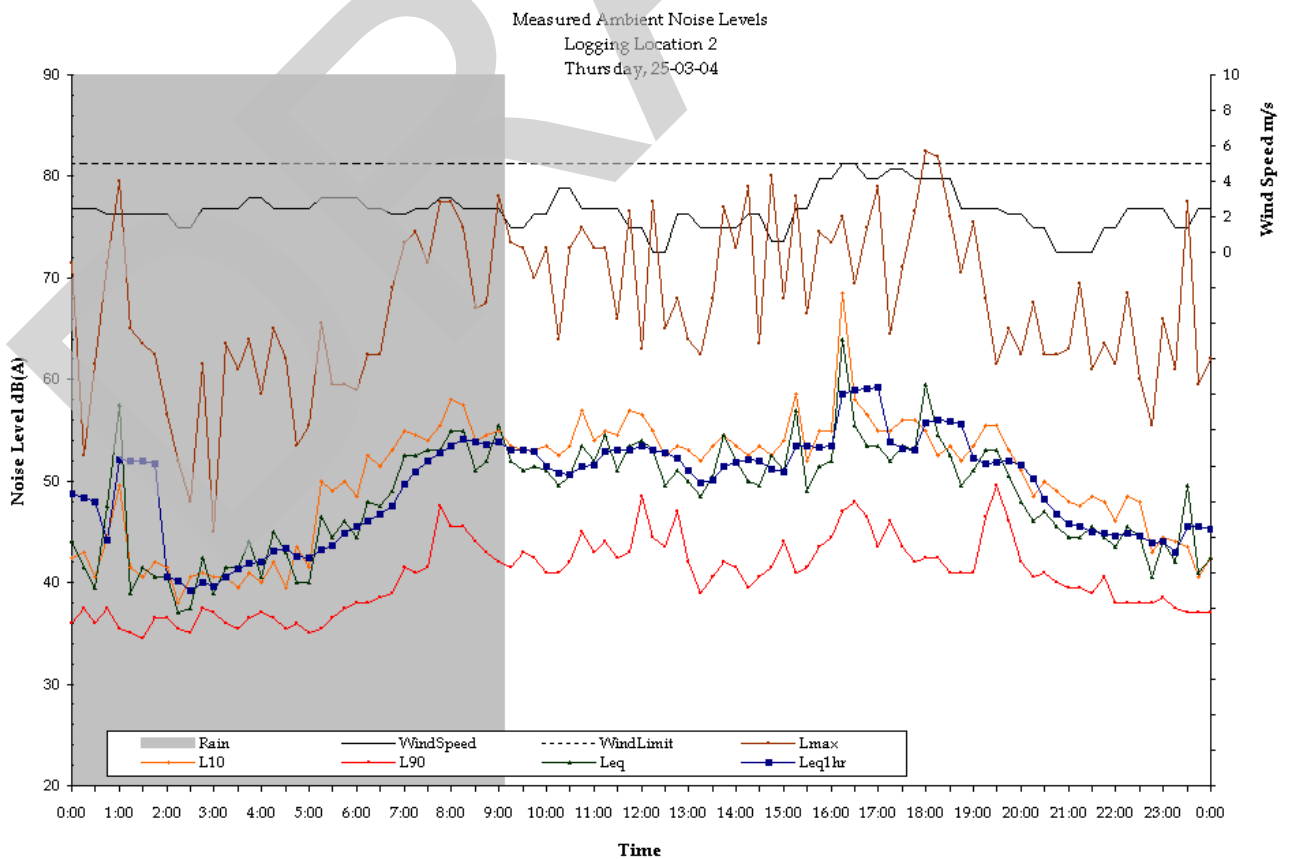
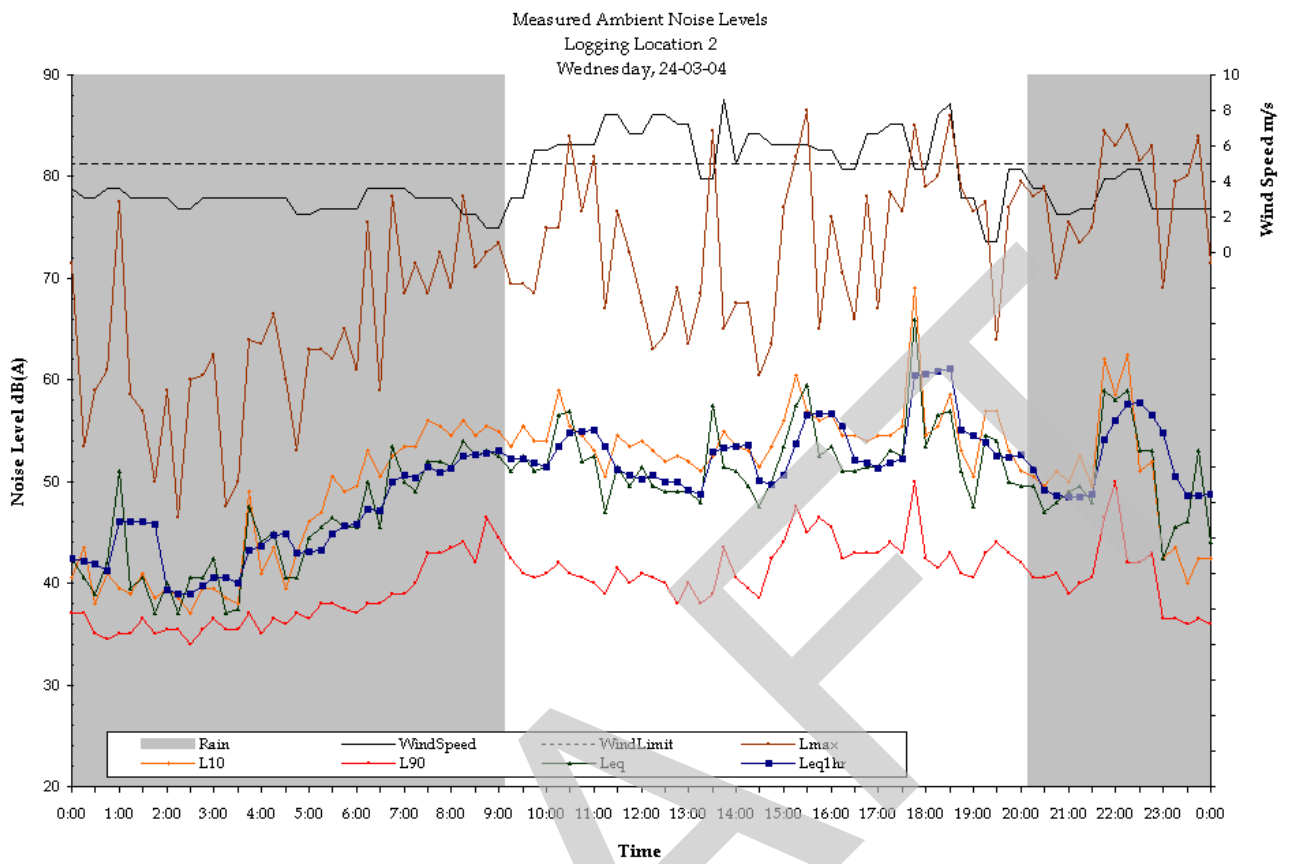


Measured Ambient Noise Levels  
Logging Location 2  
Sunday, 21-03-04

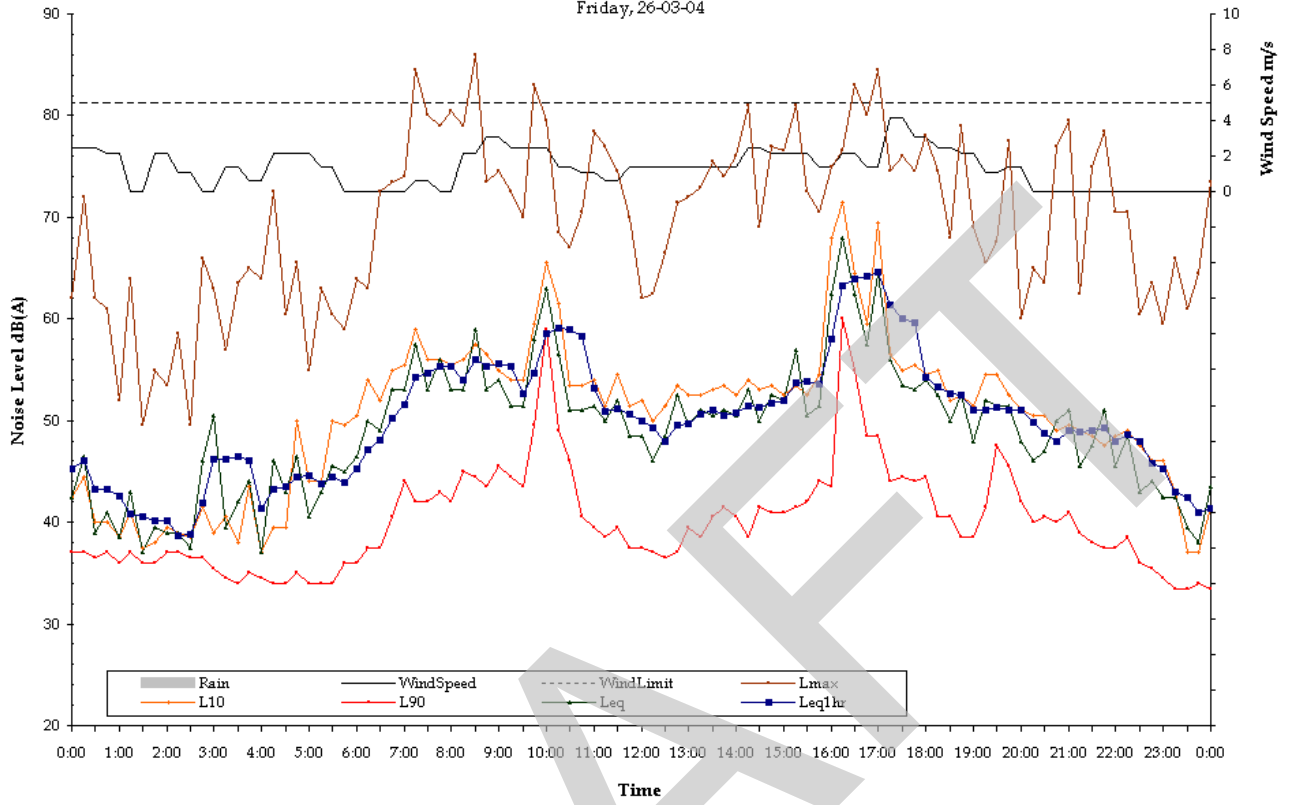




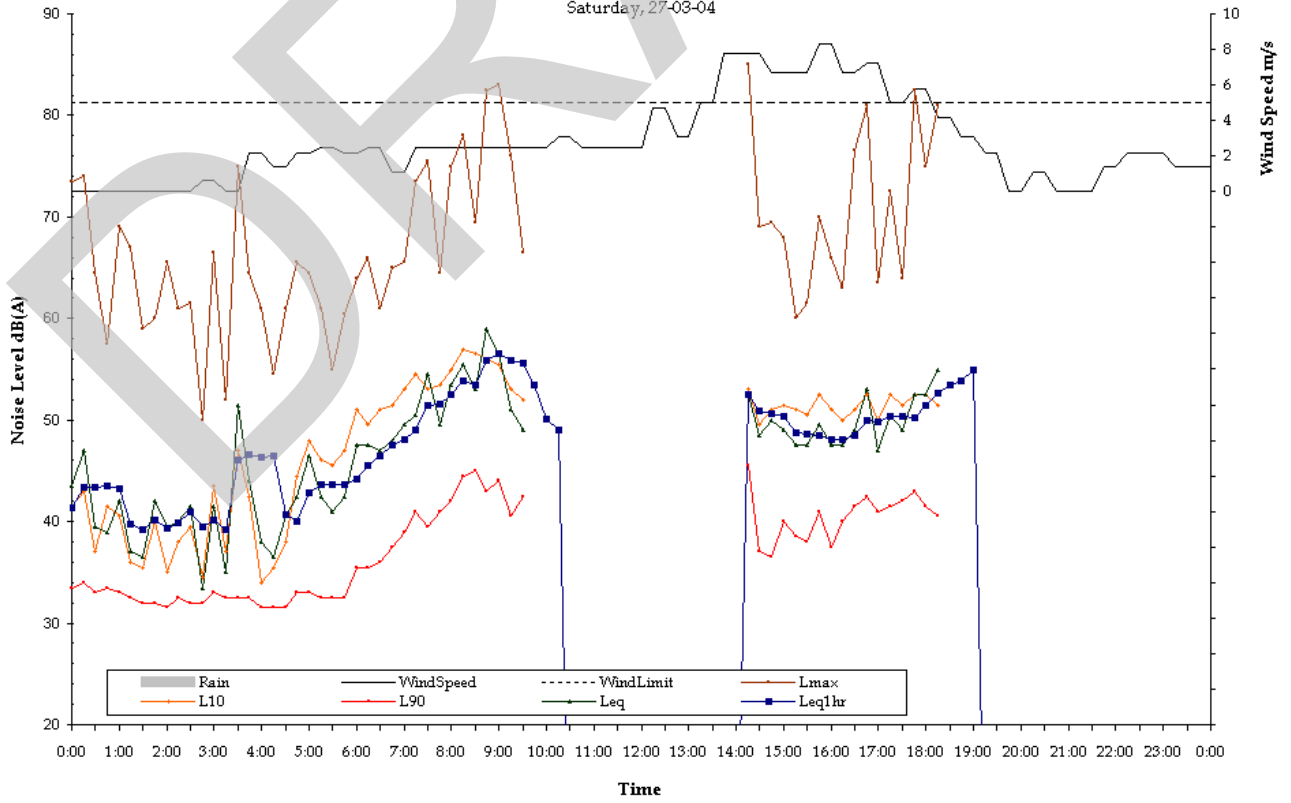


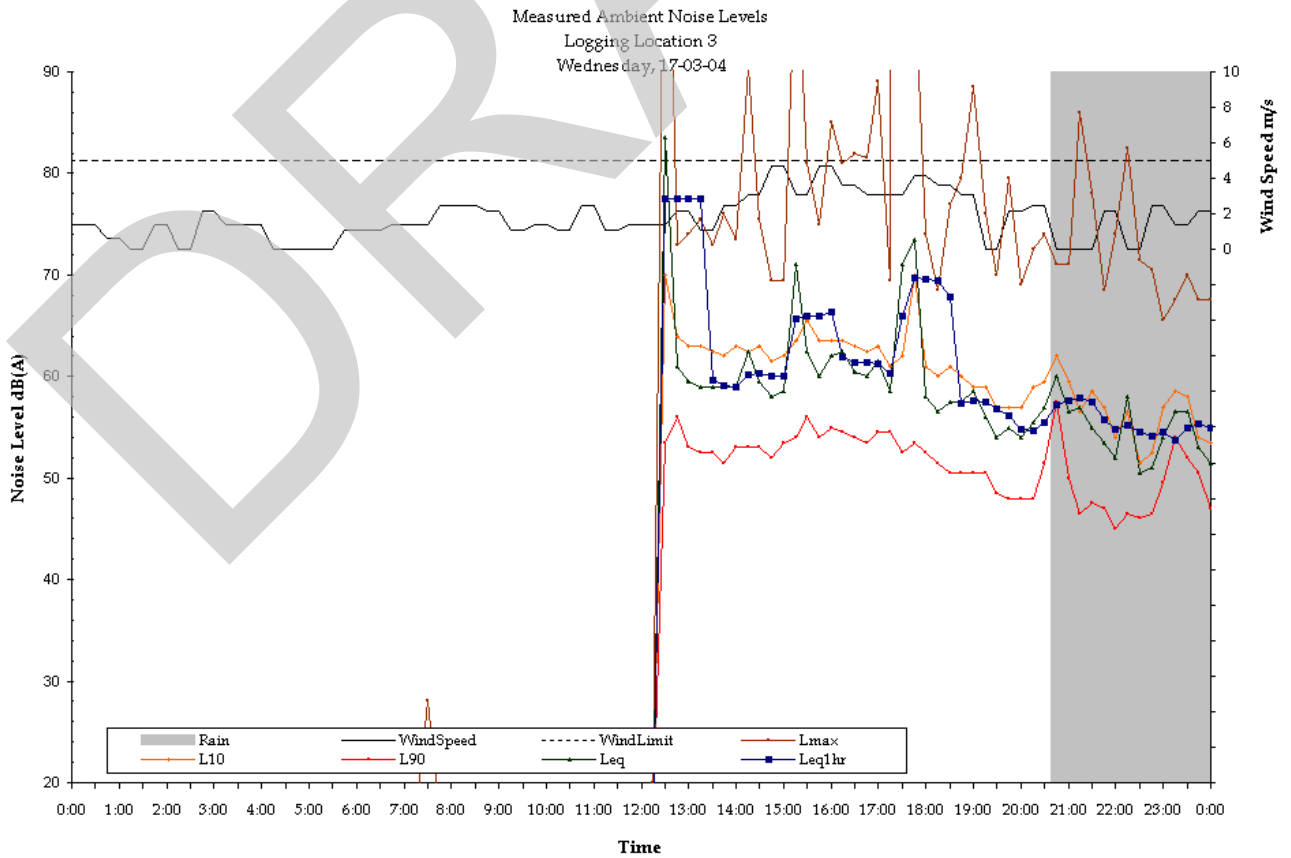
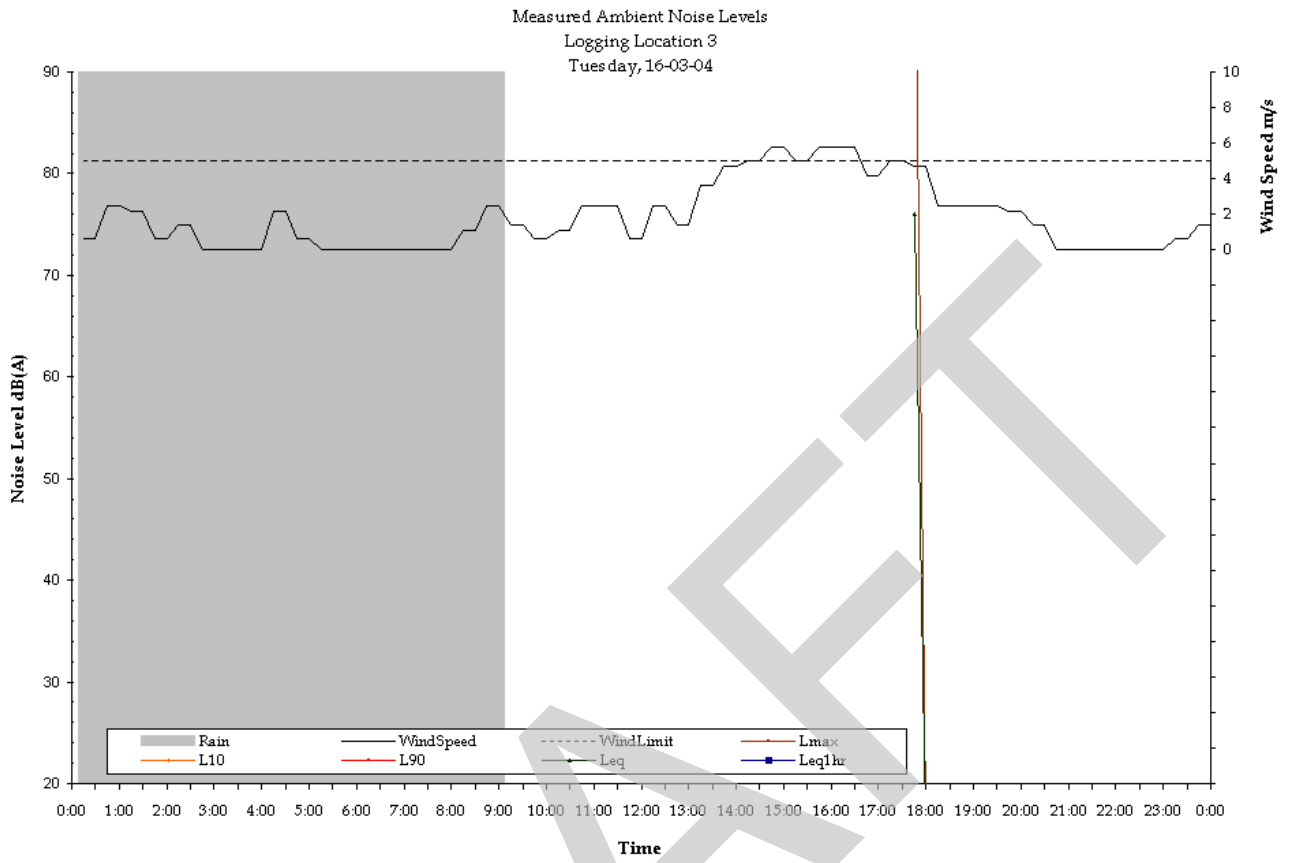


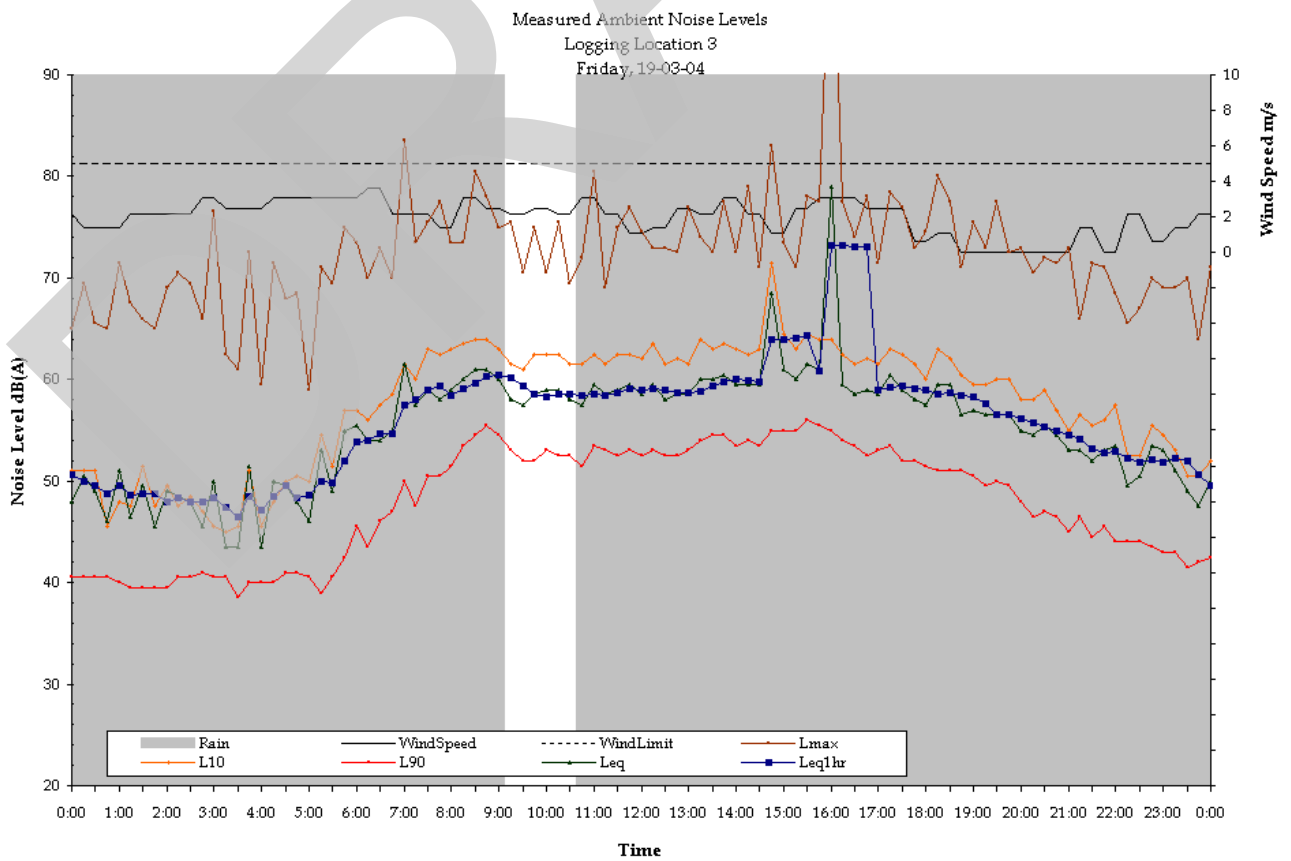
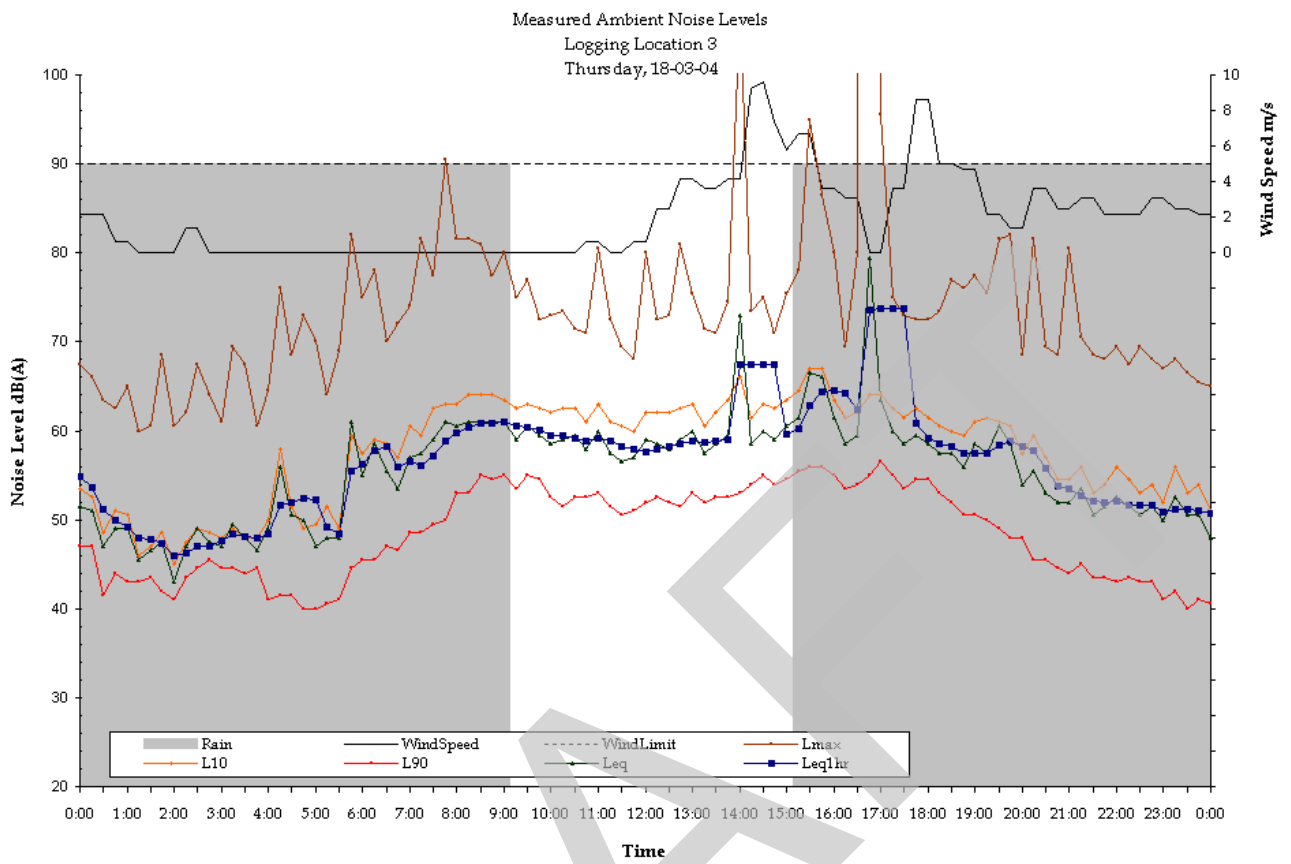
Measured Ambient Noise Levels  
Logging Location 2  
Friday, 26-03-04

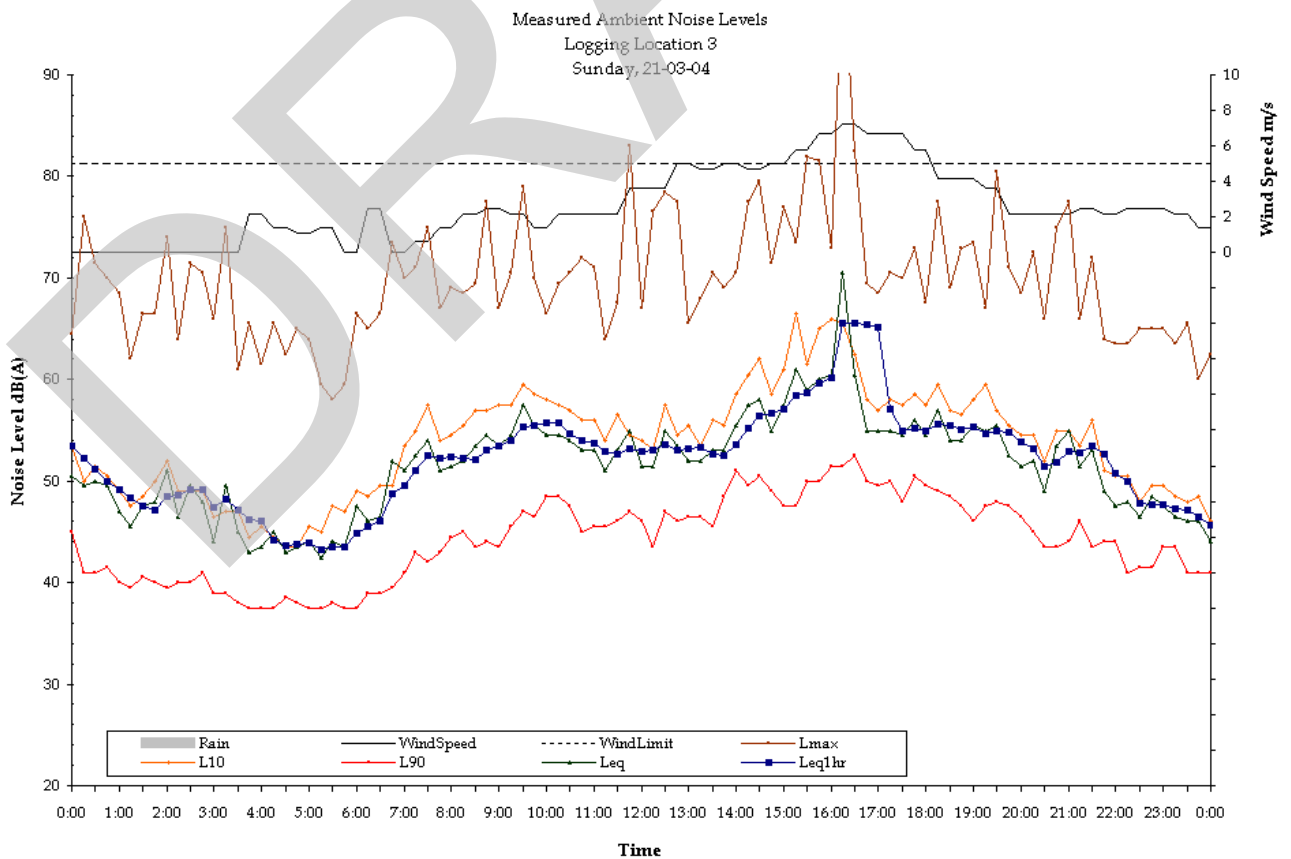
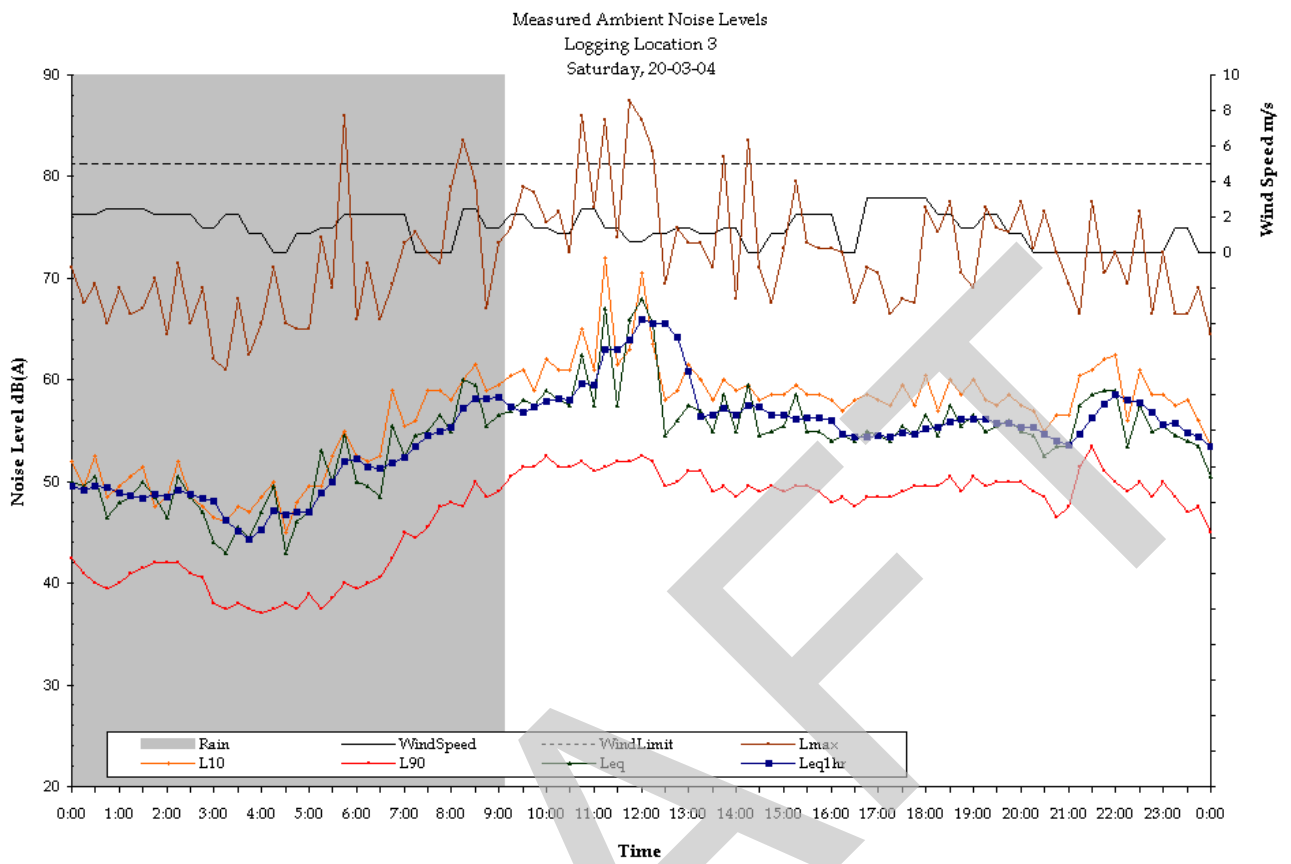


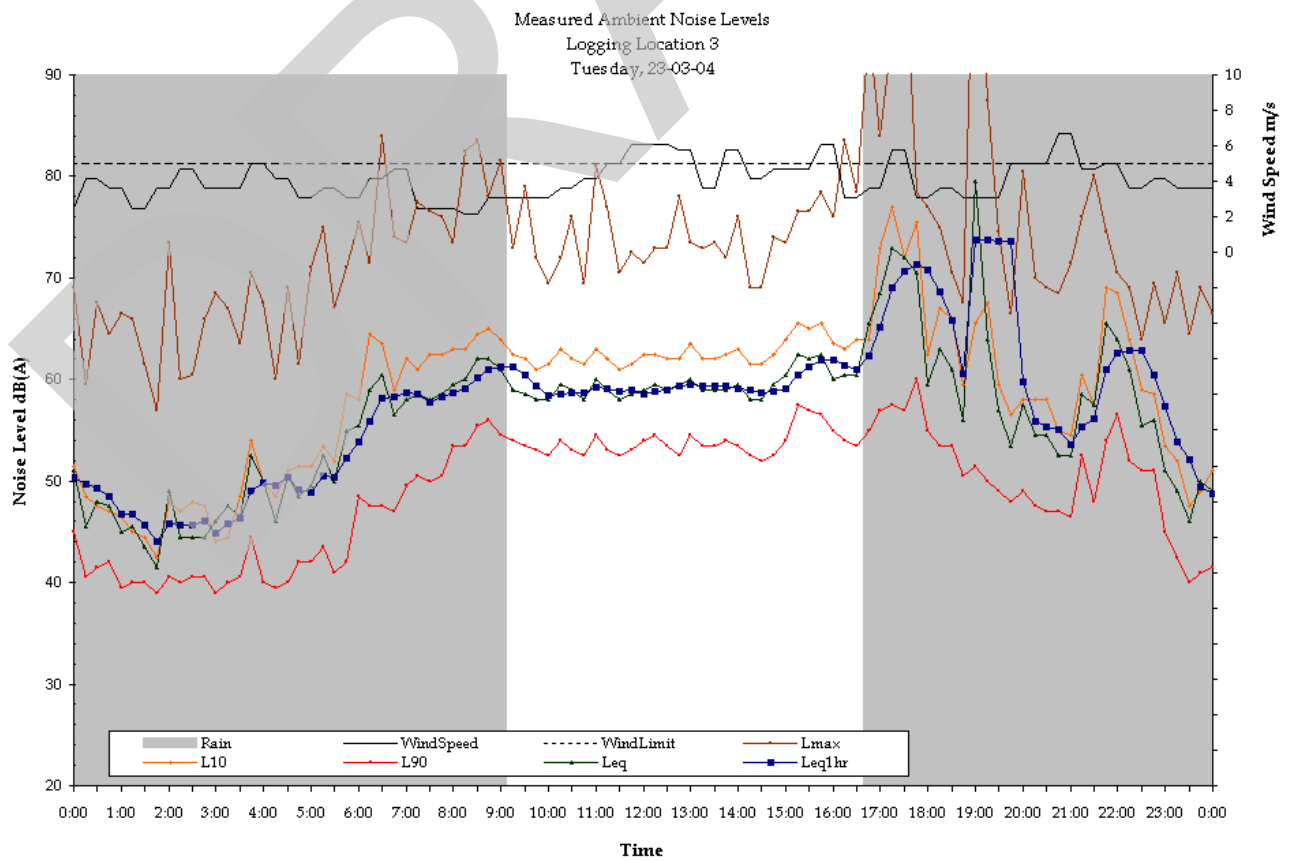
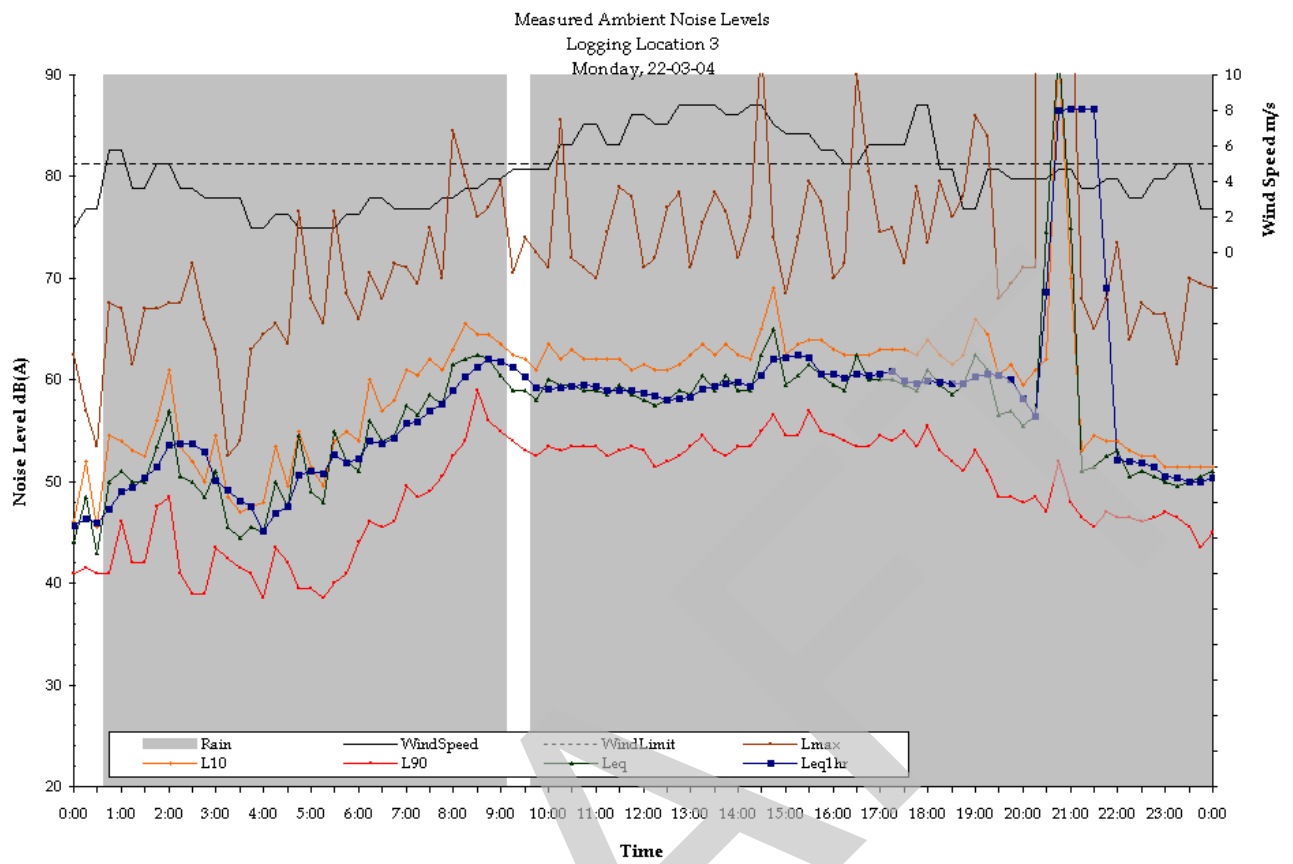
Measured Ambient Noise Levels  
Logging Location 2  
Saturday, 27-03-04

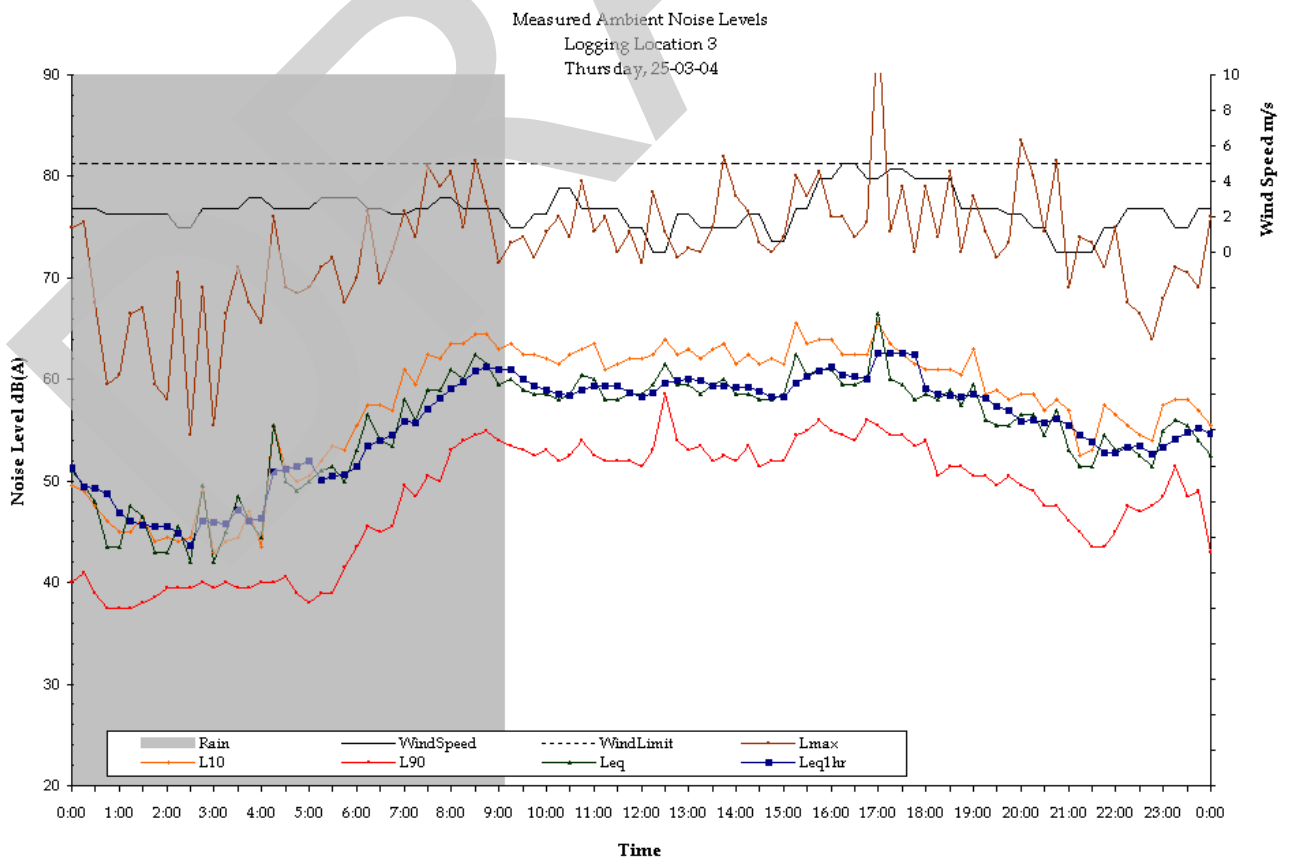
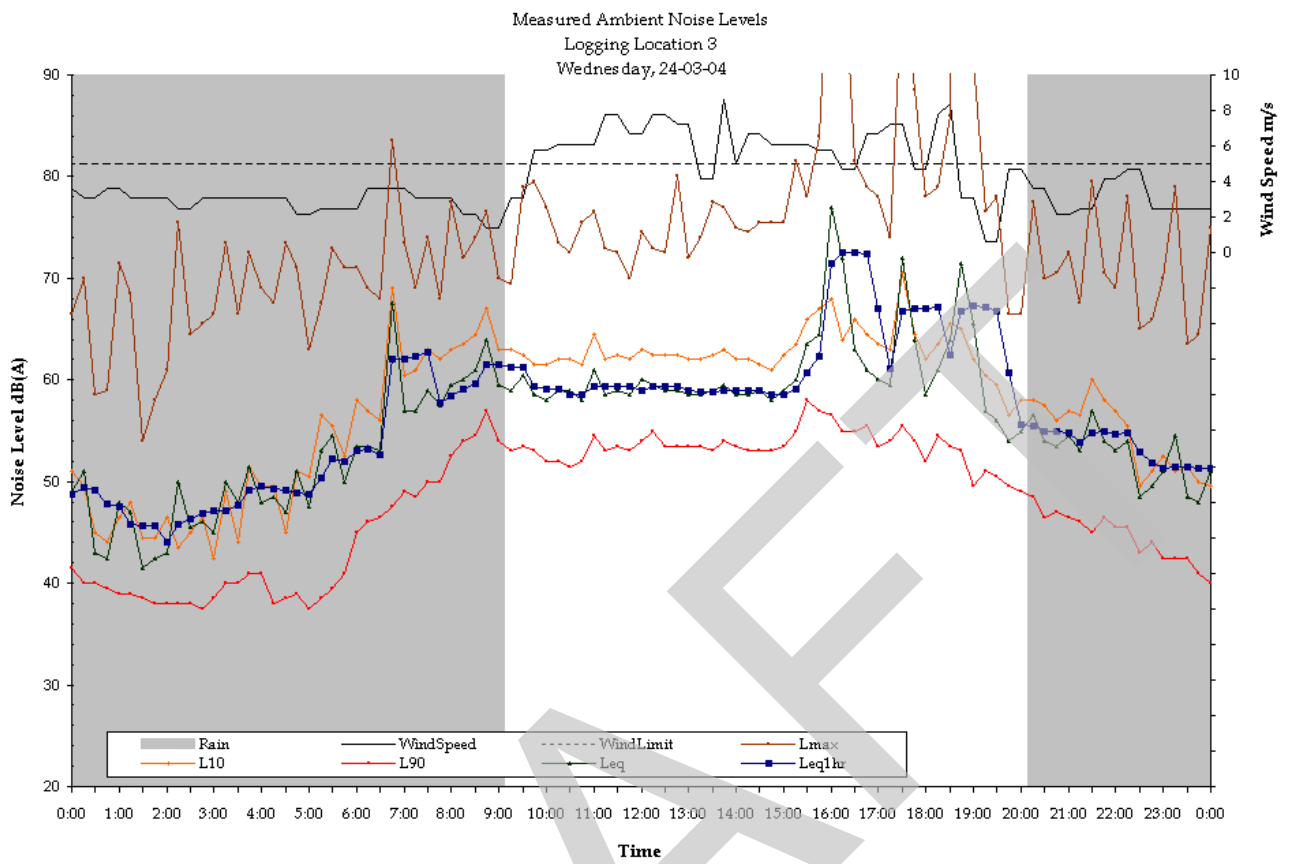




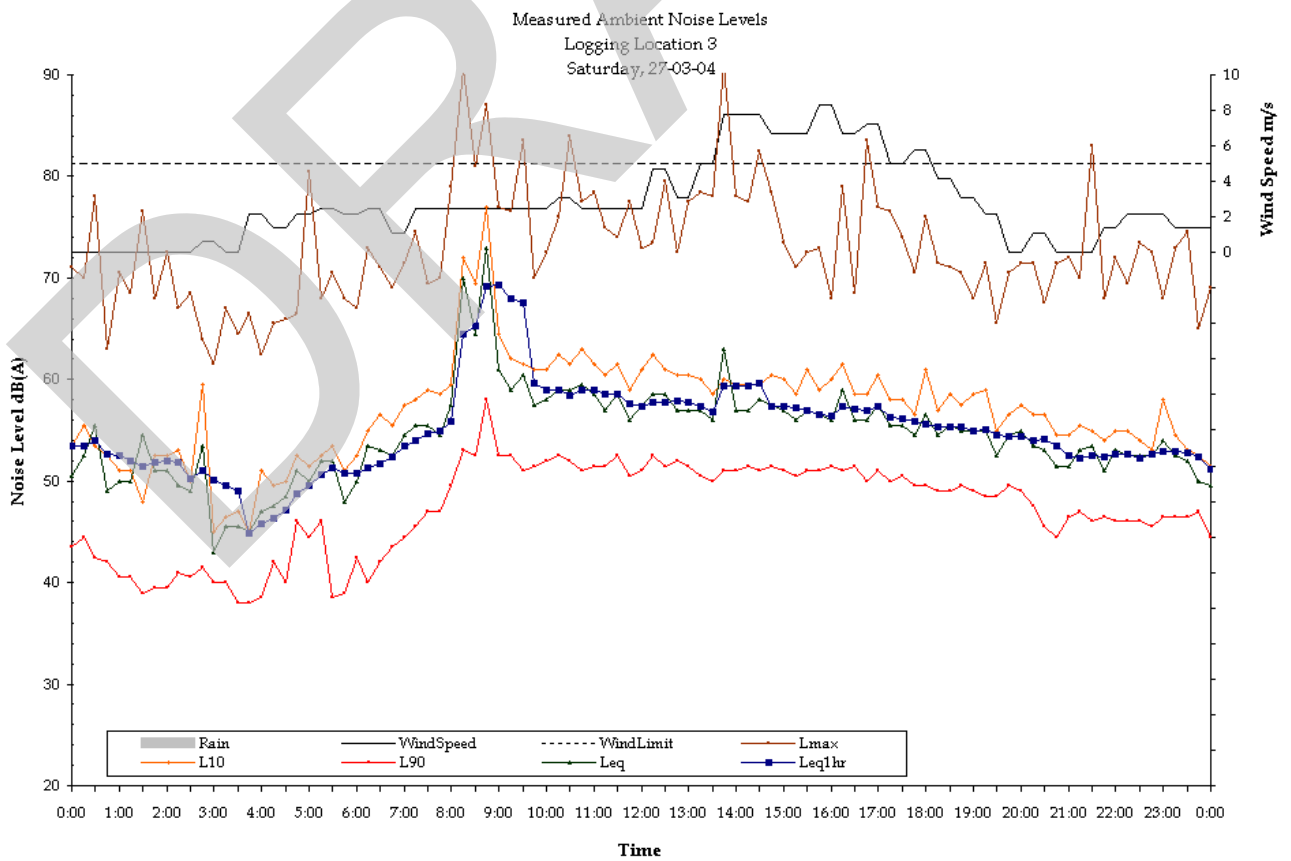
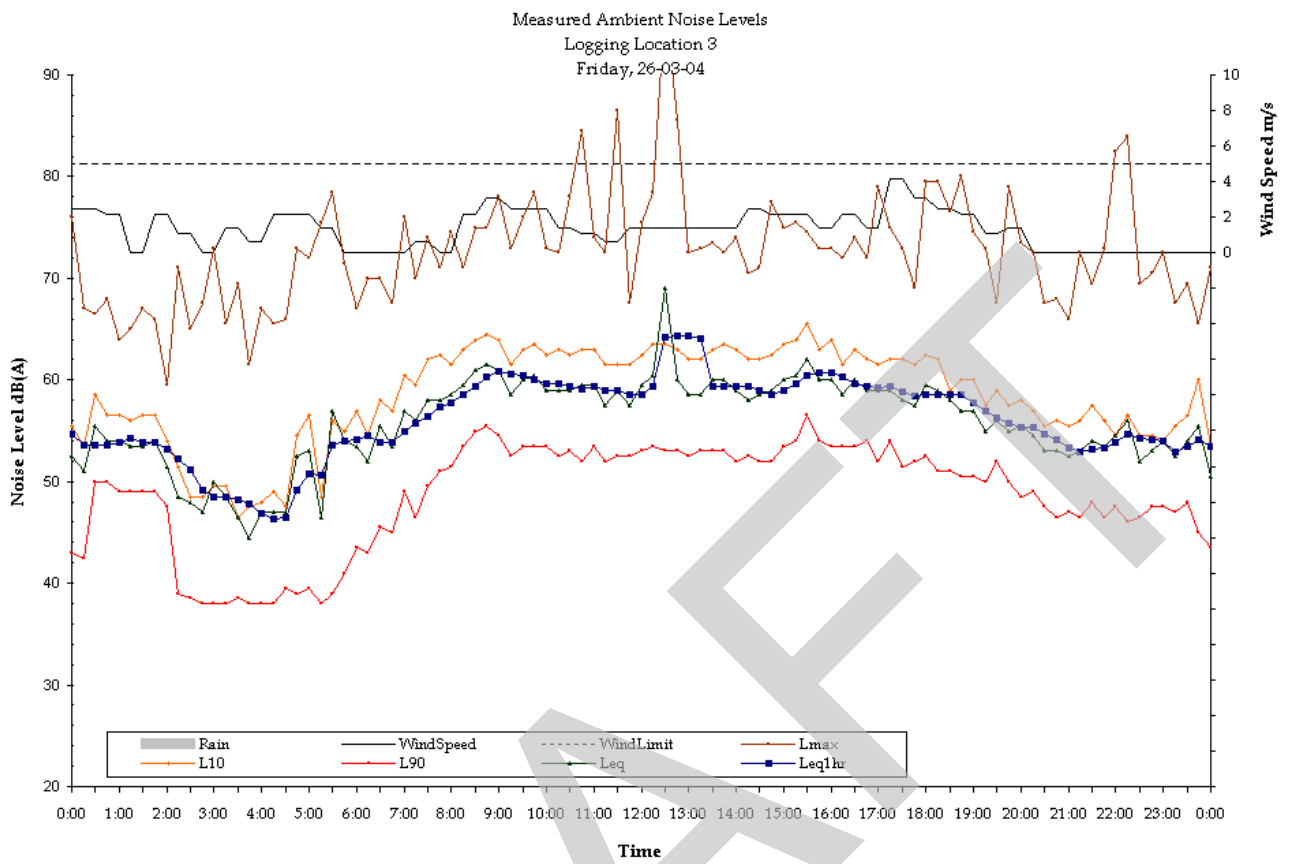


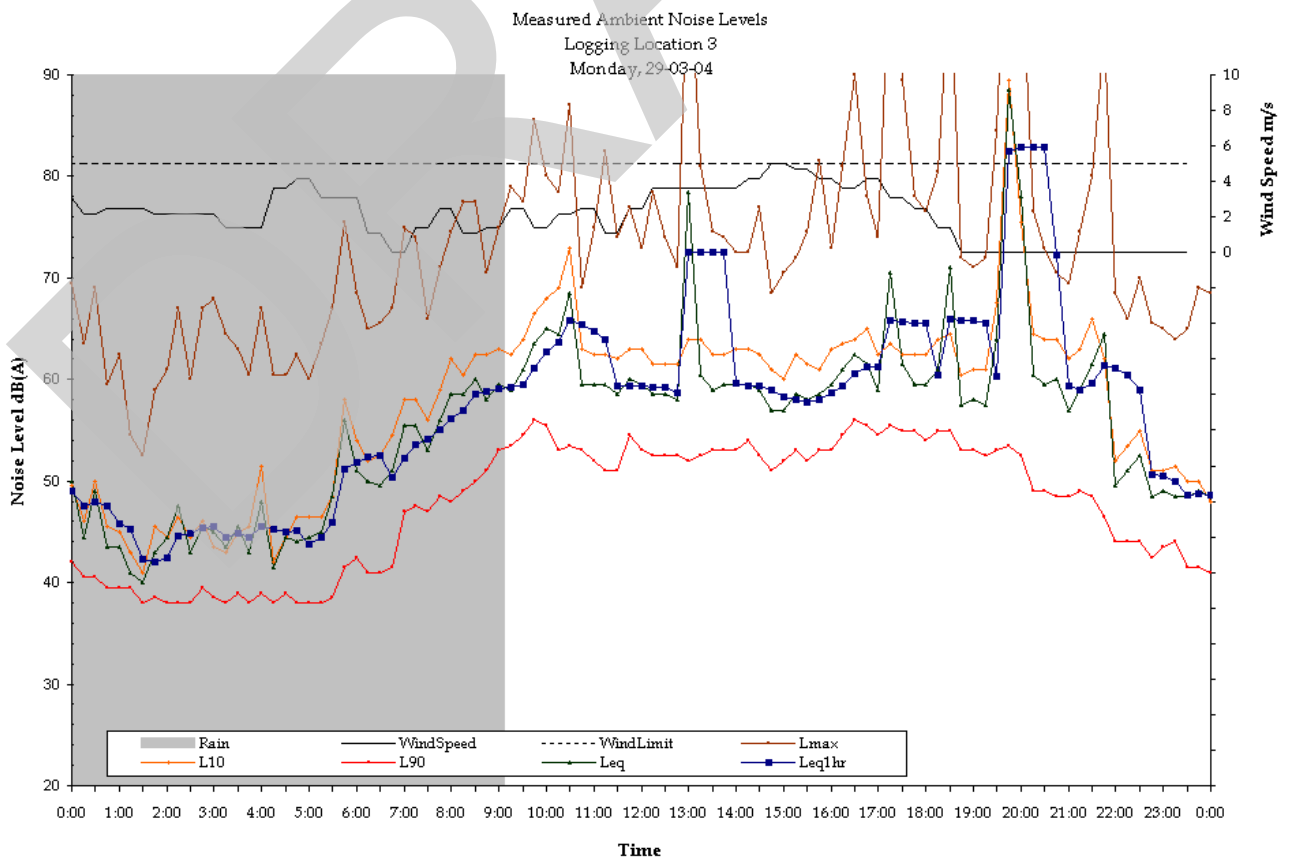
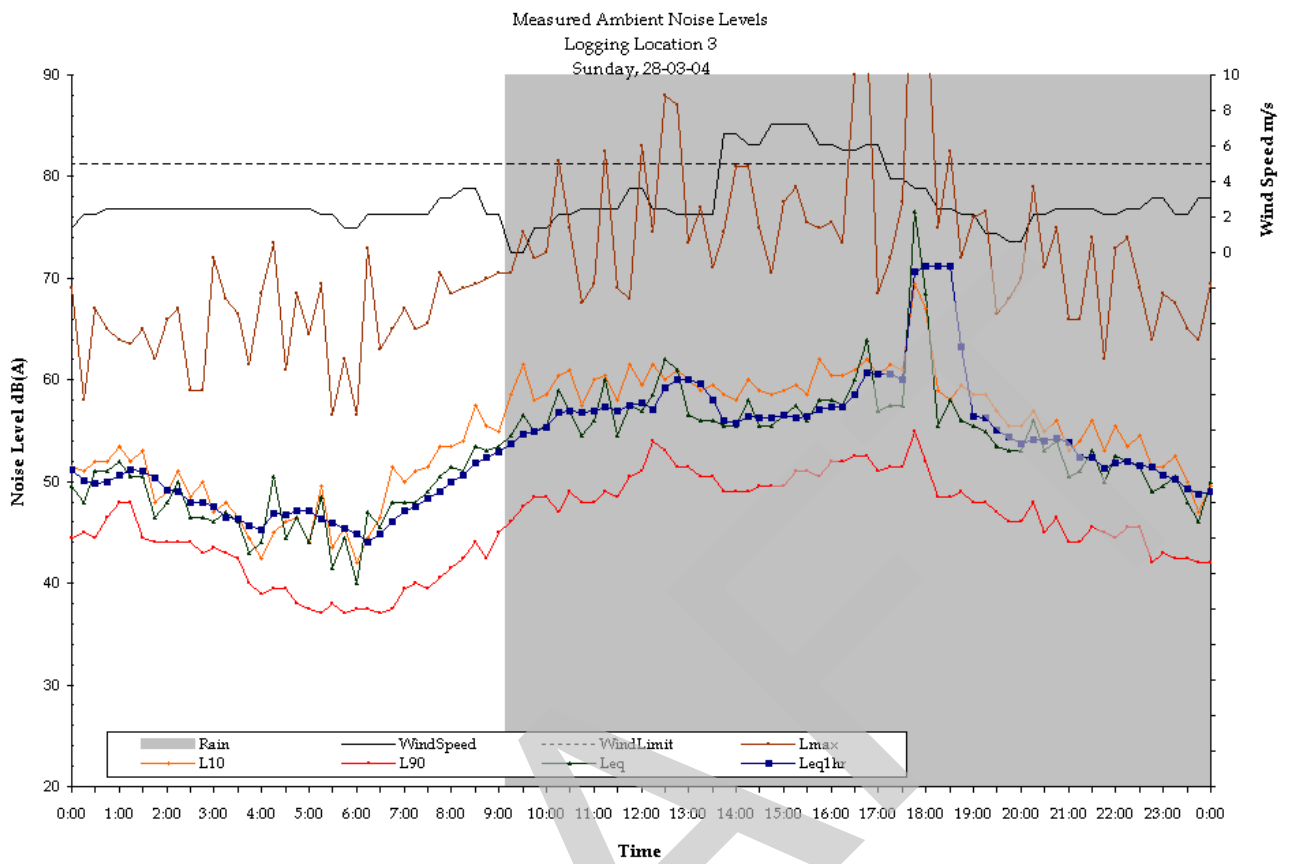


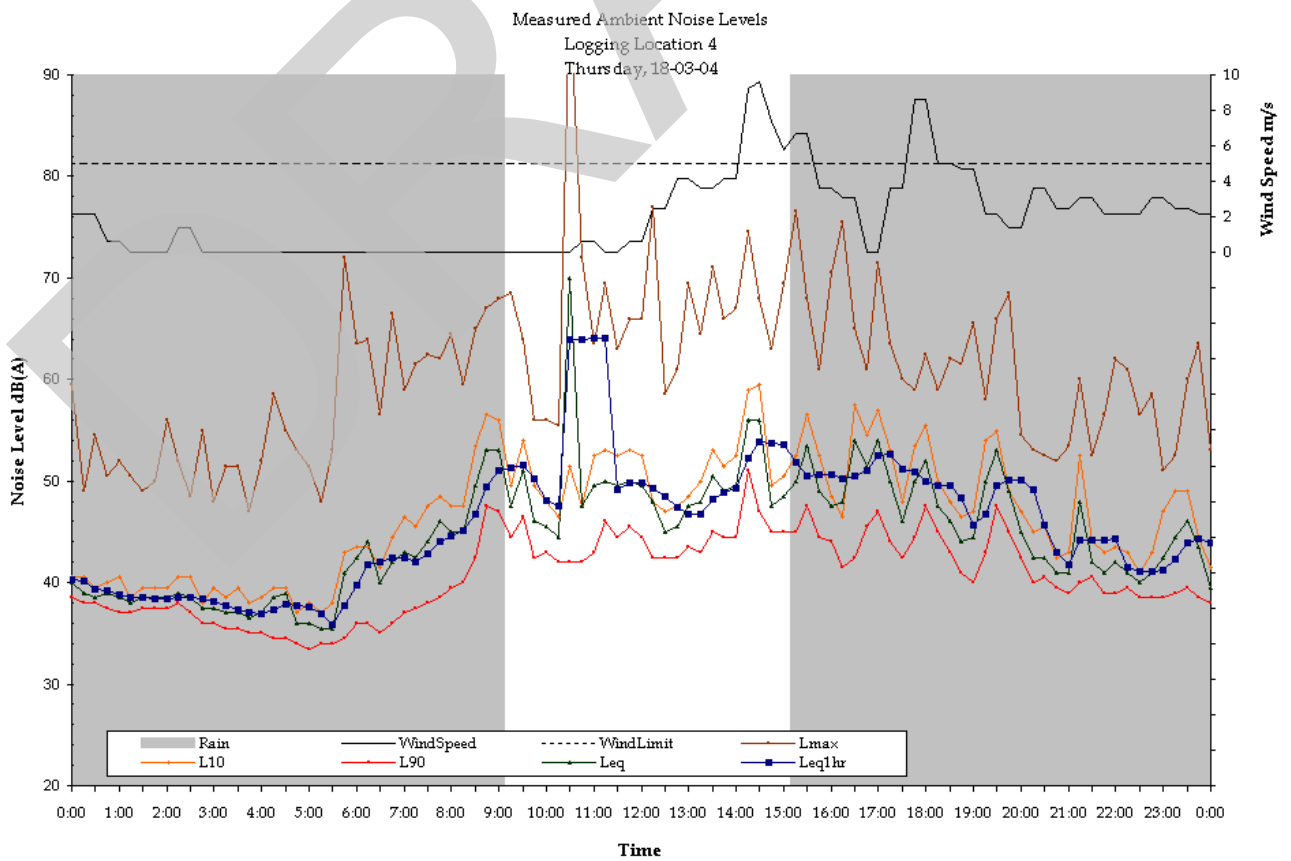
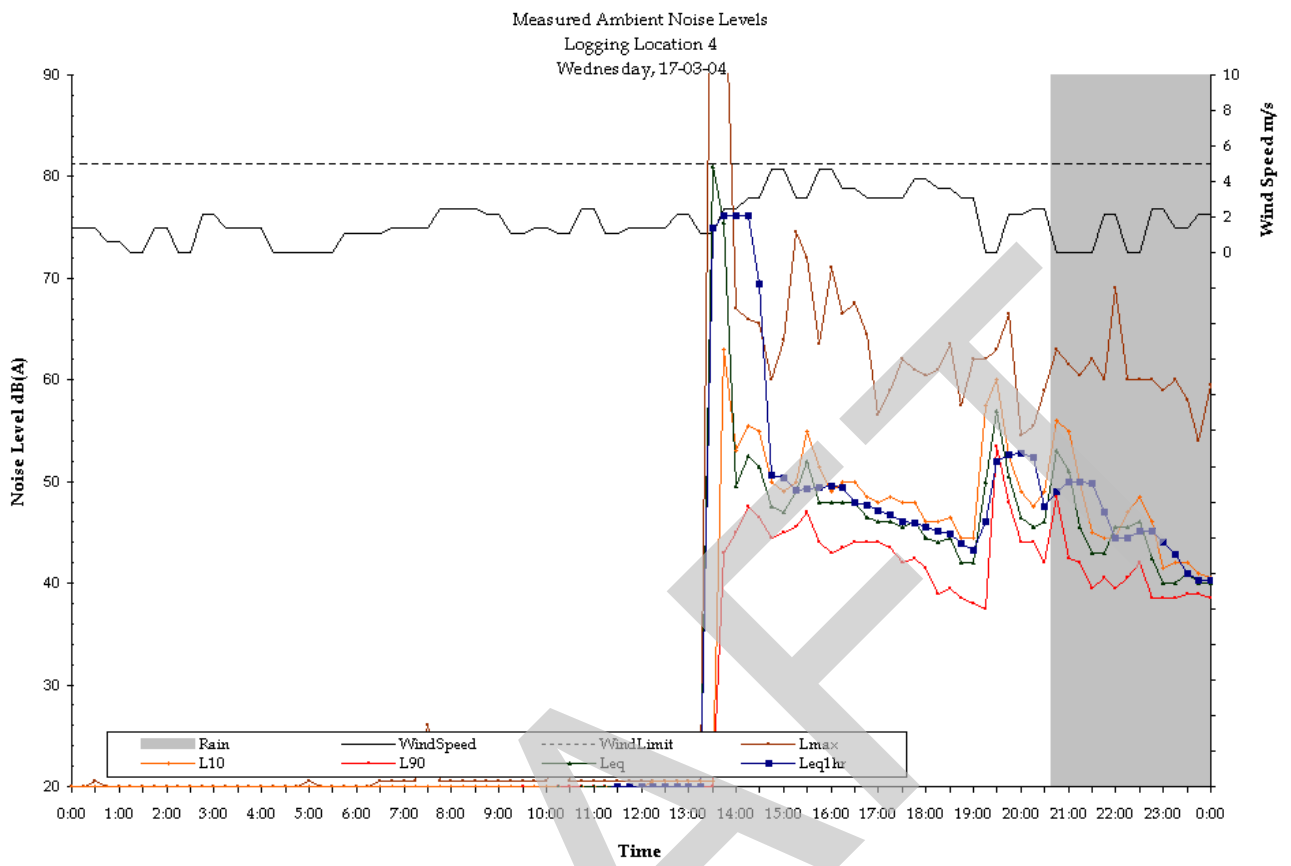


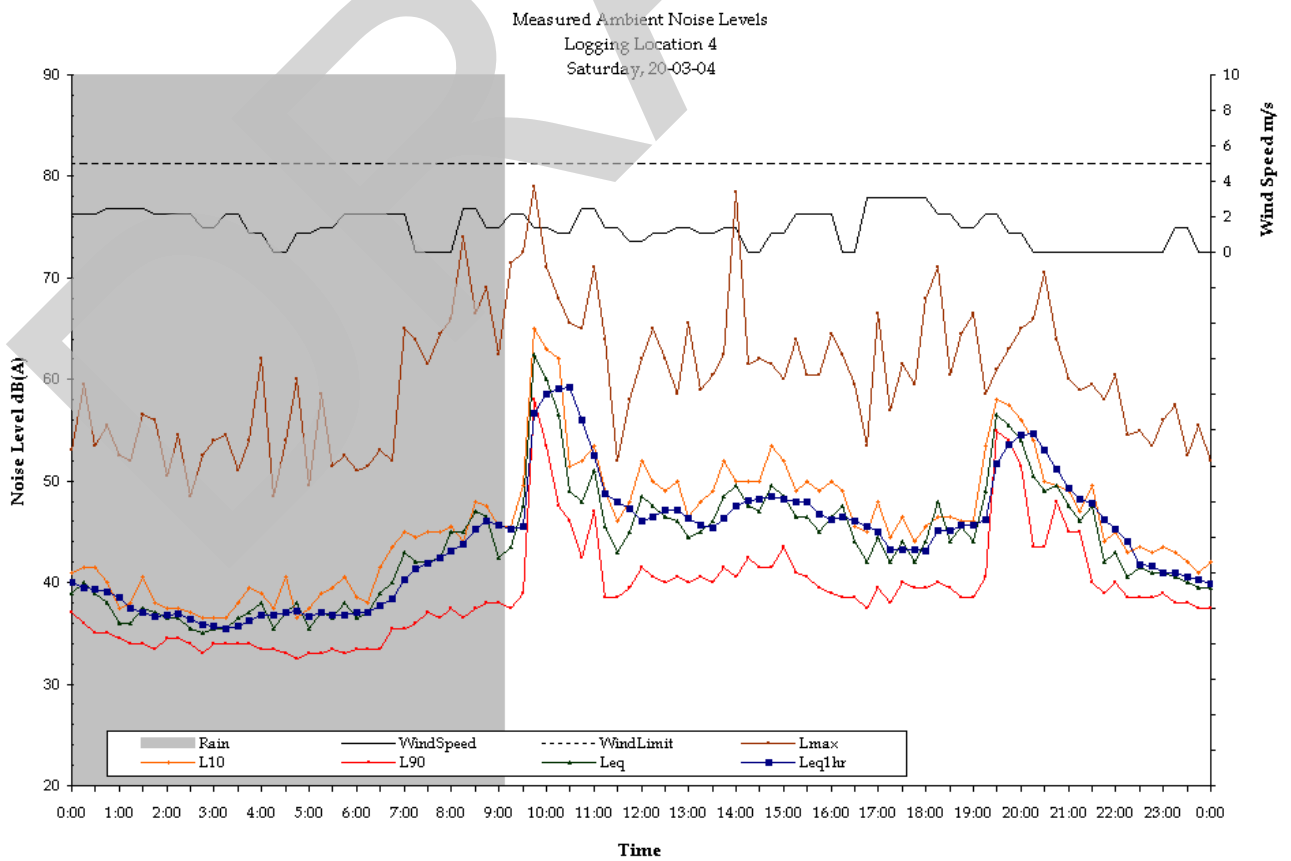
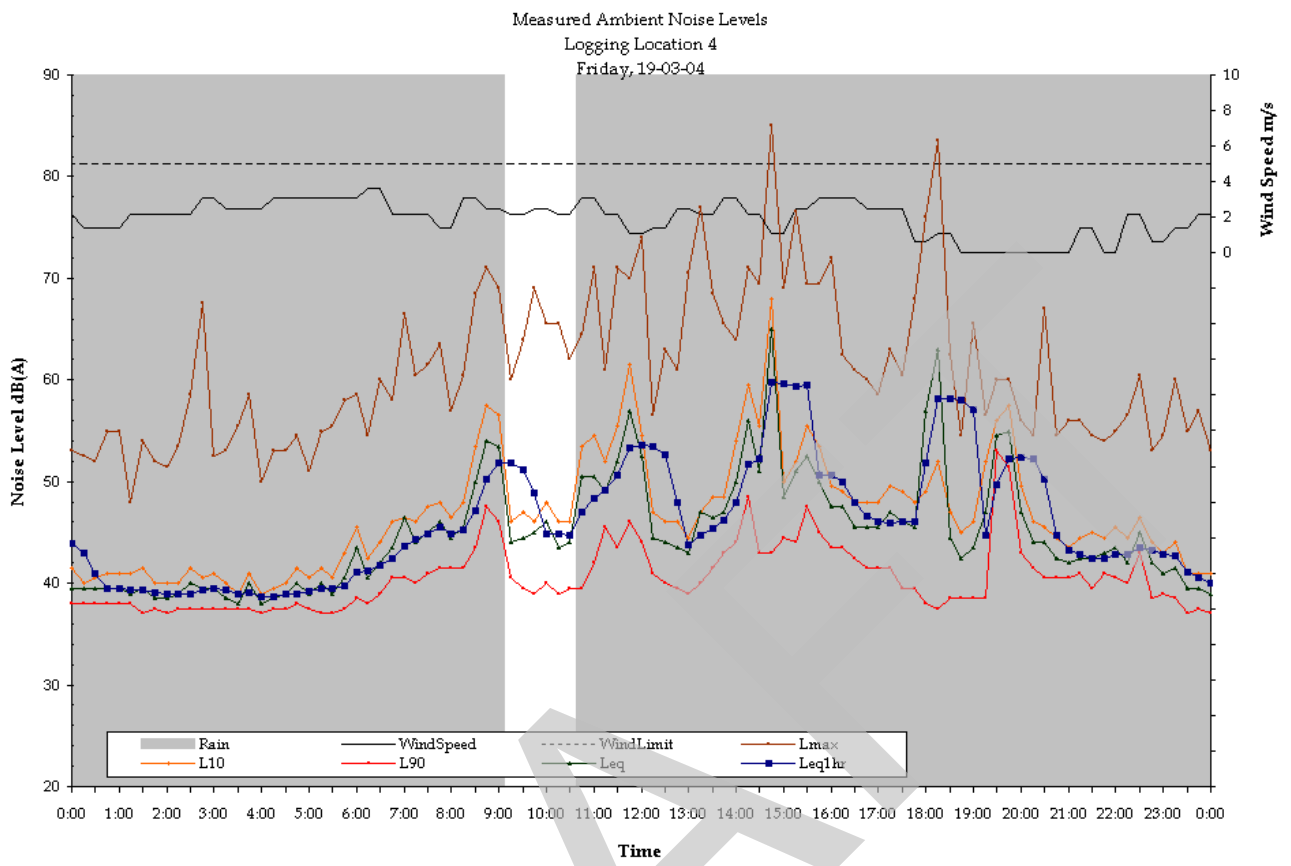


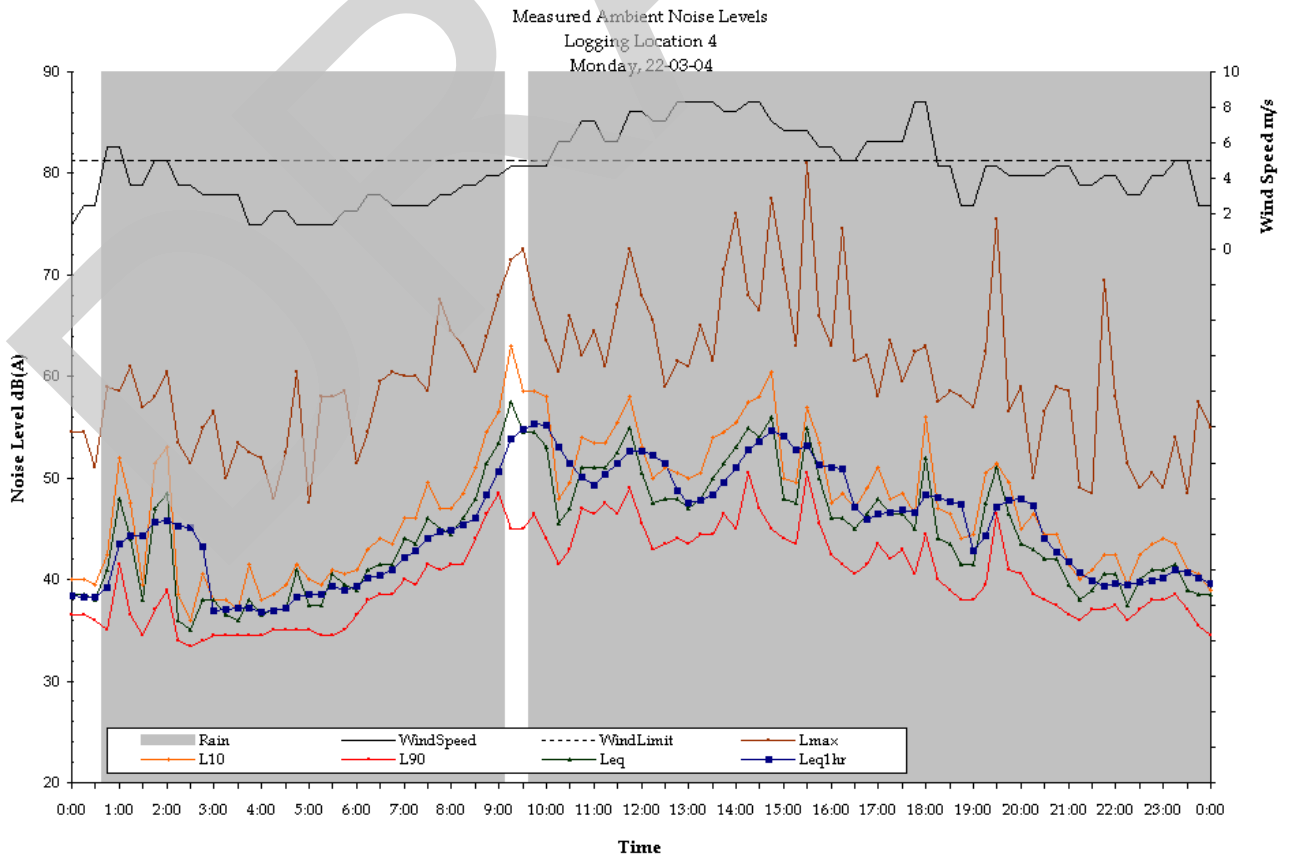
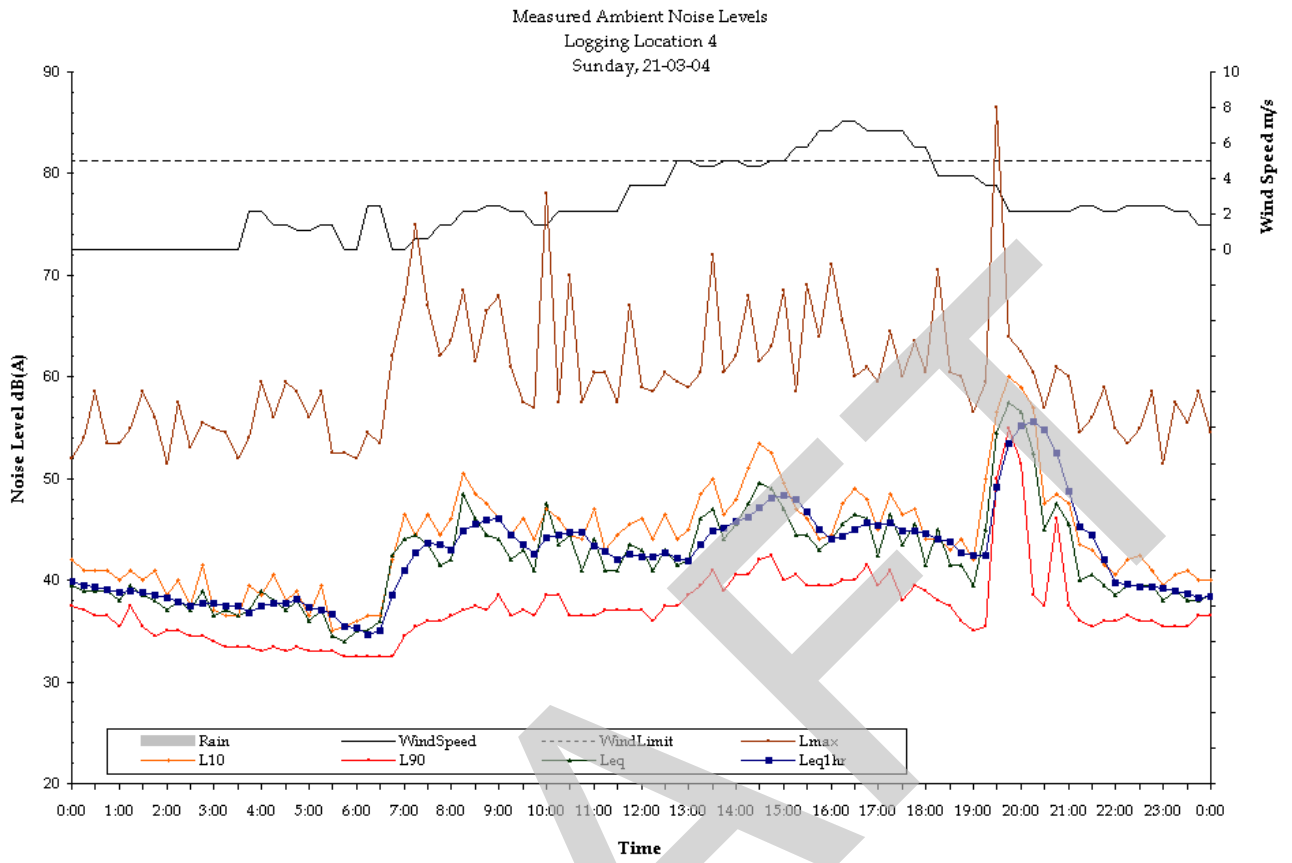




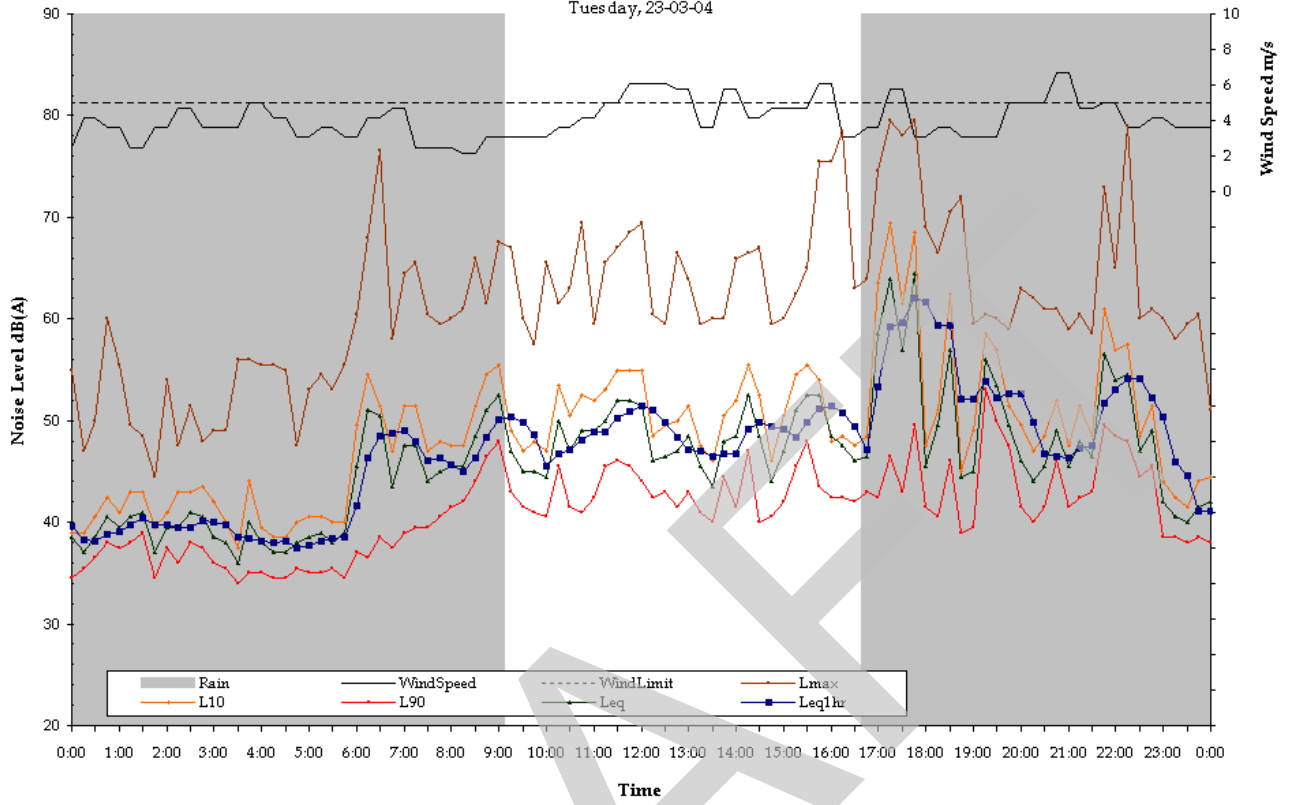




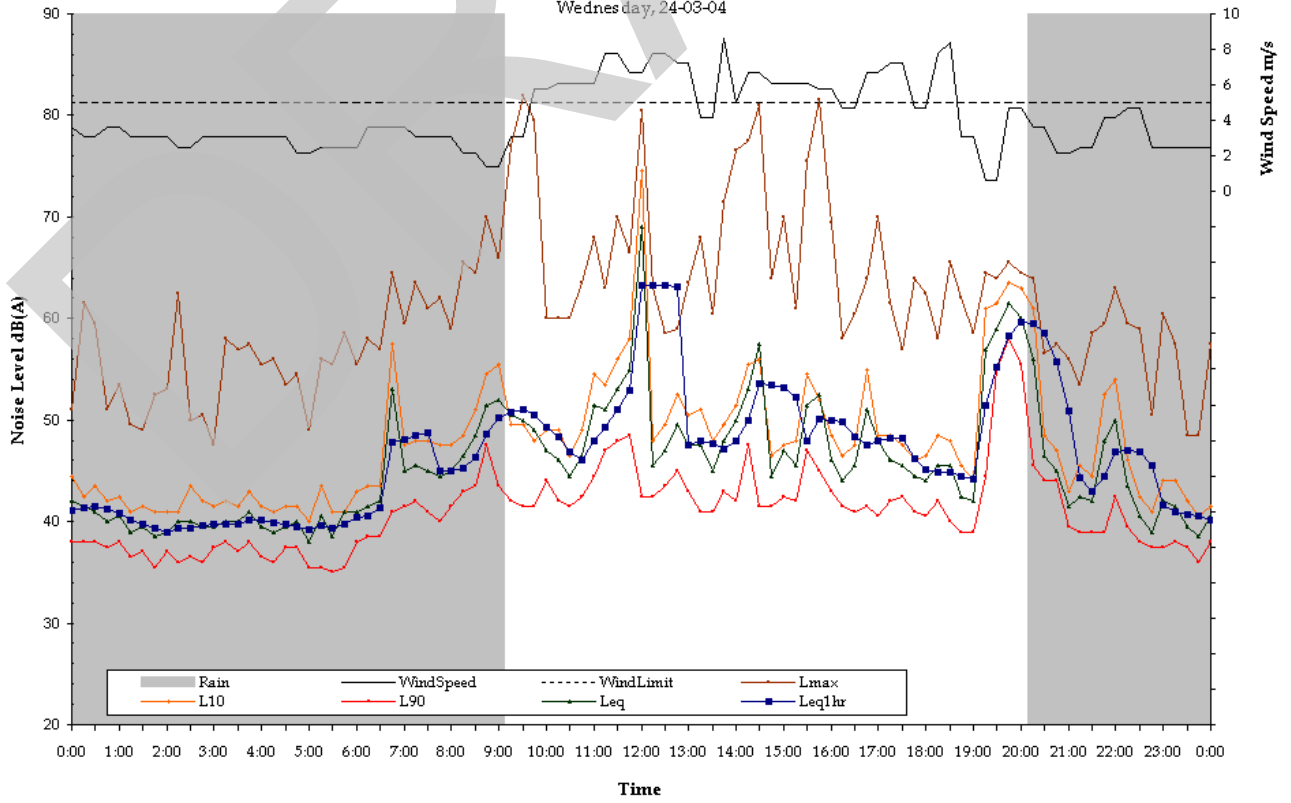


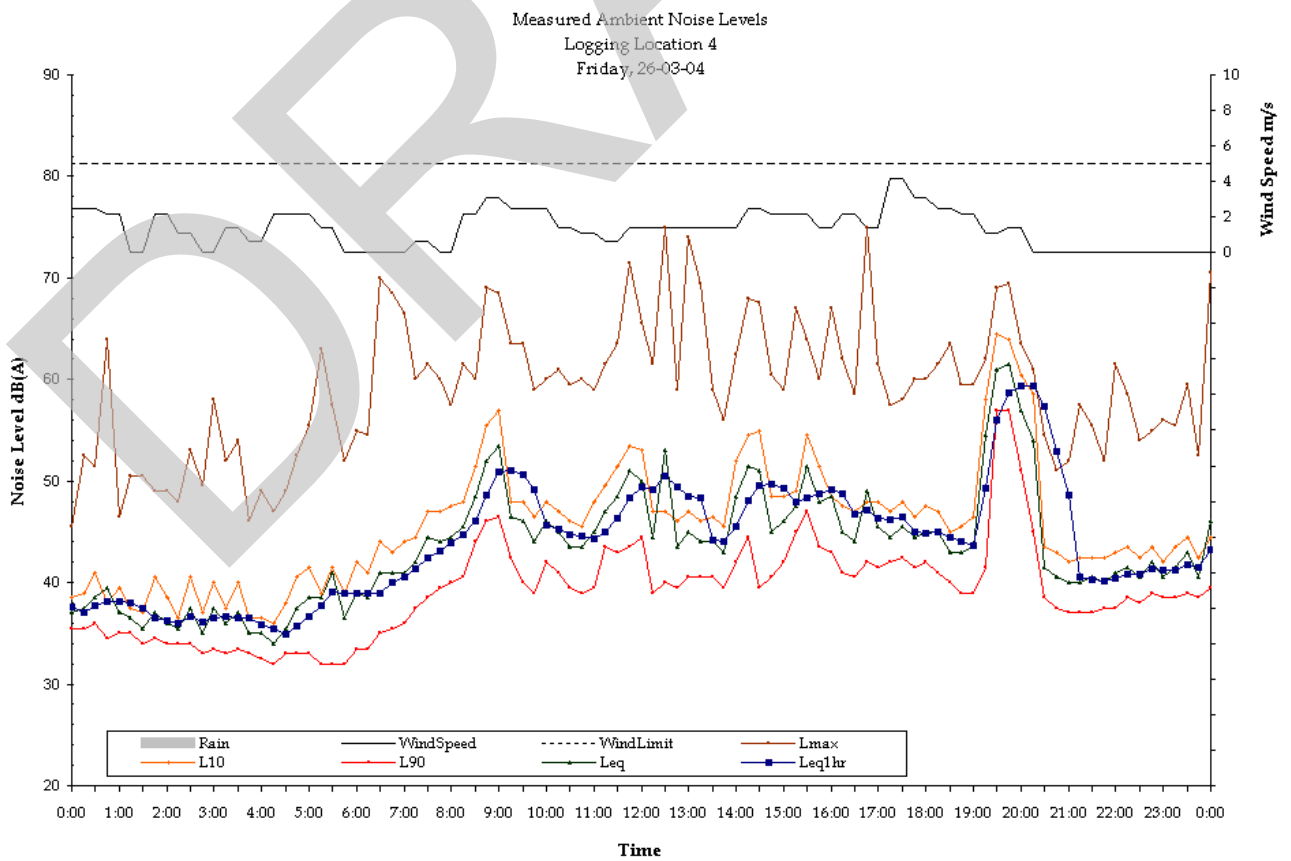
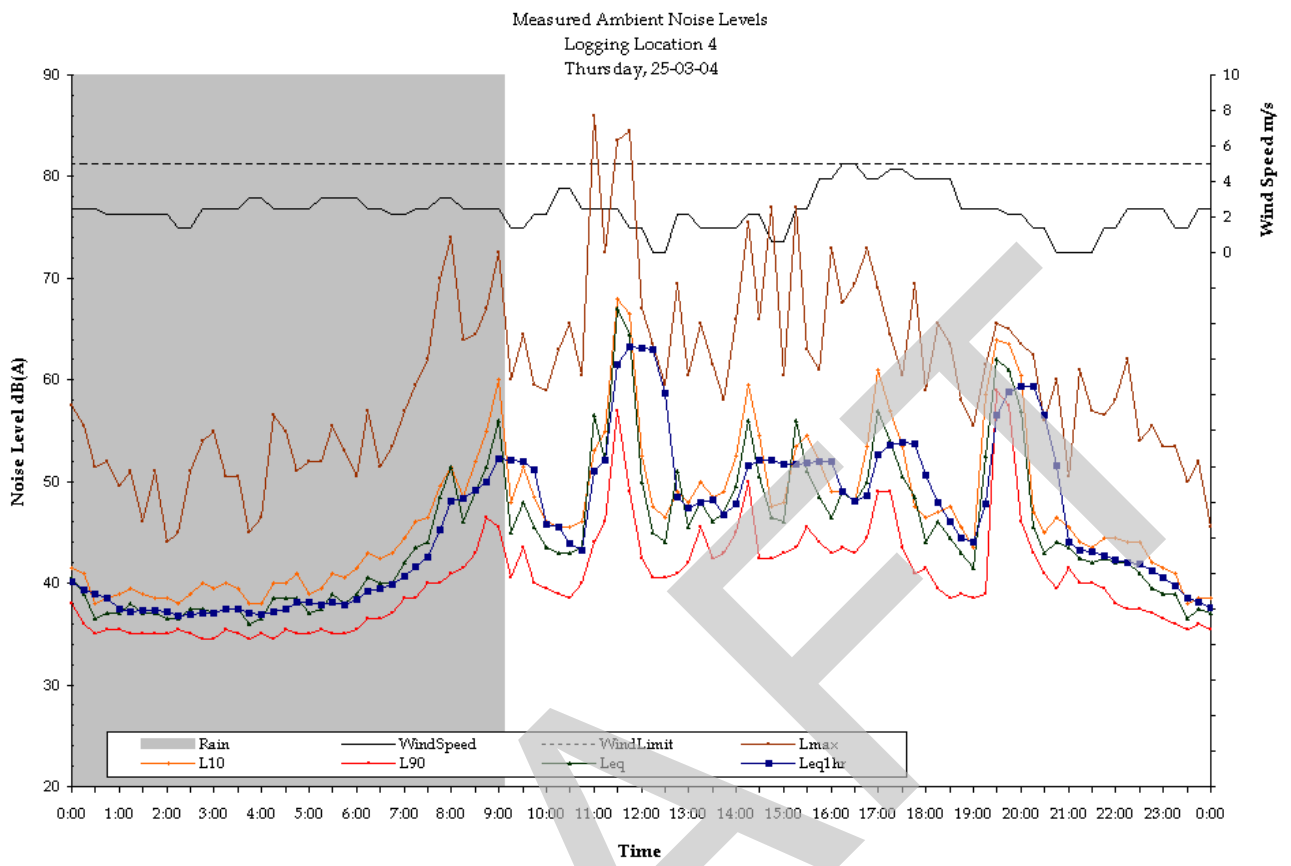


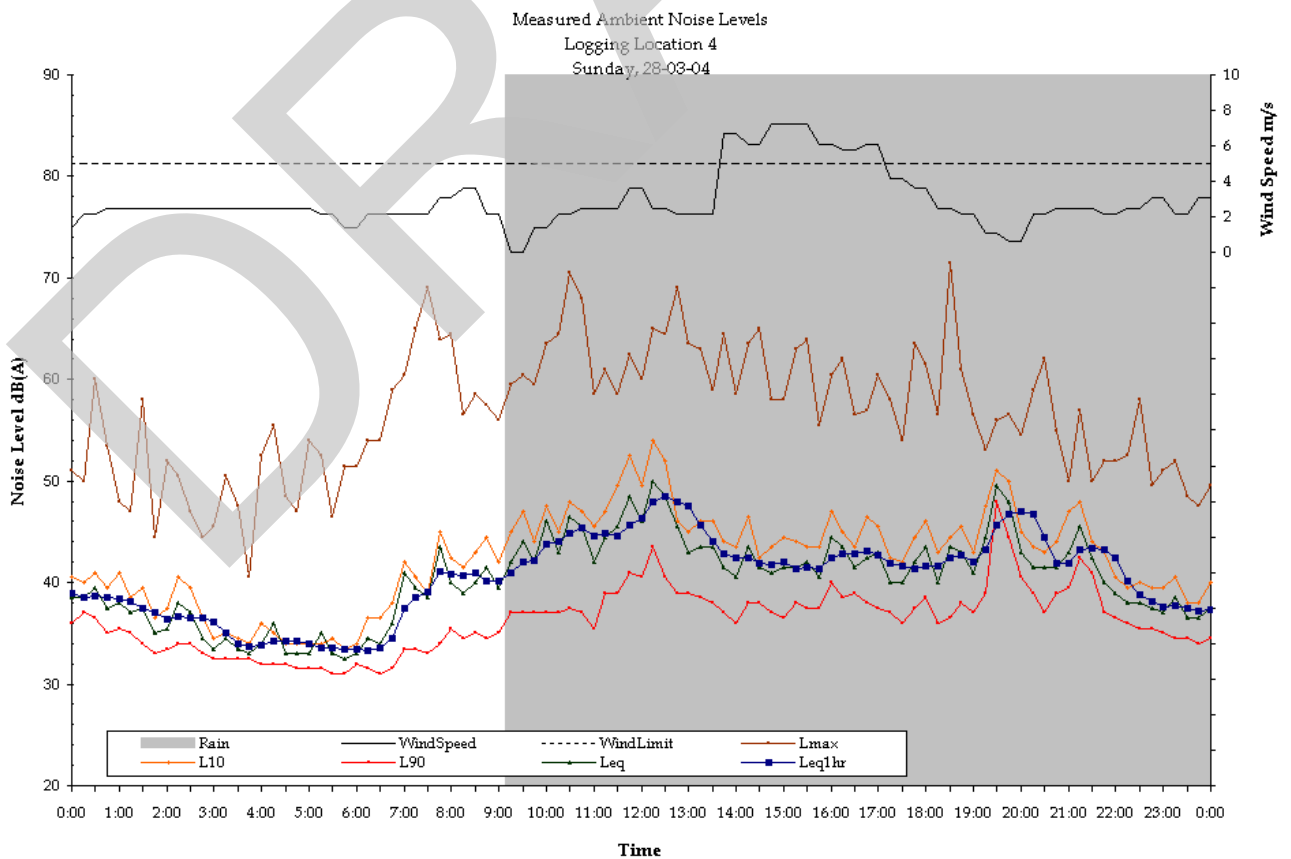
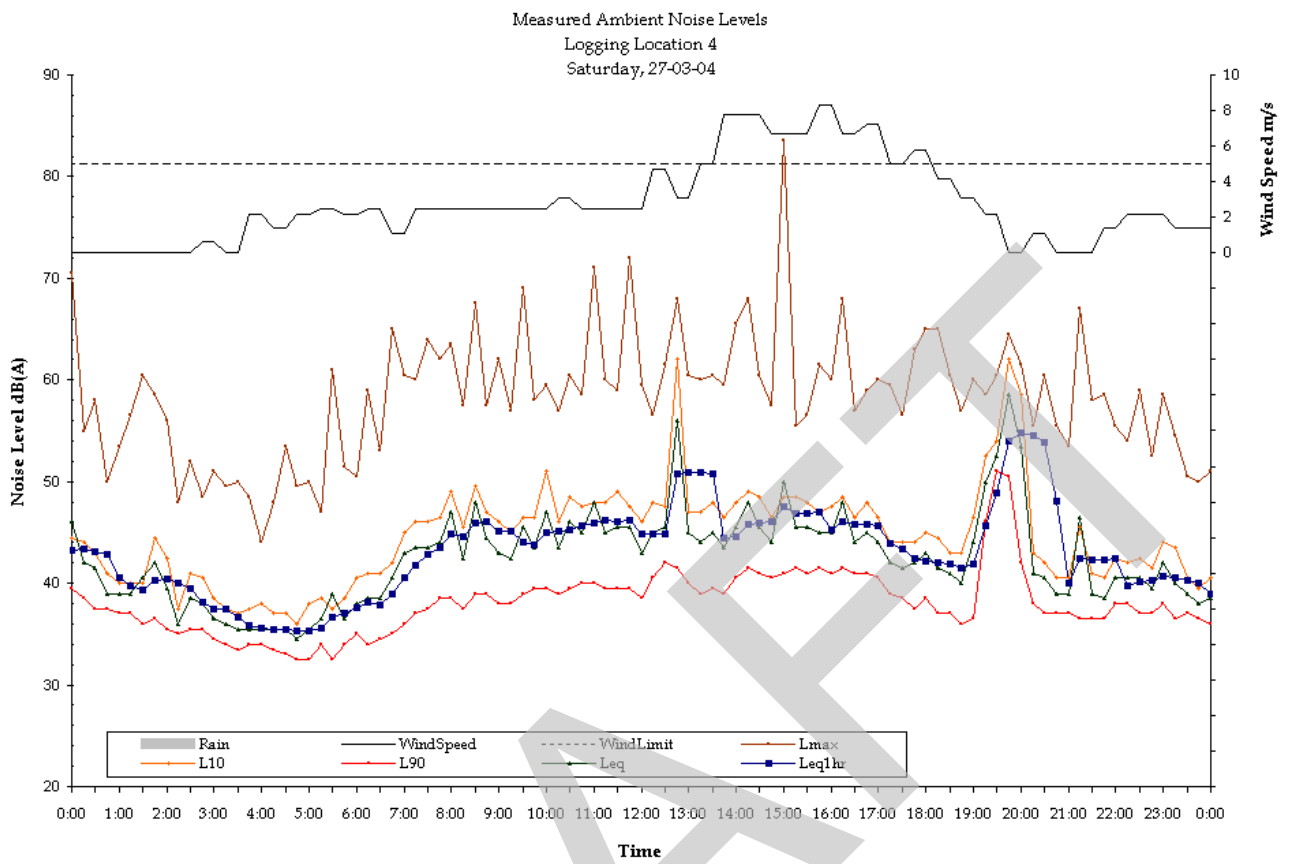
Measured Ambient Noise Levels  
Logging Location 4  
Tuesday, 23-03-04



Measured Ambient Noise Levels  
Logging Location 4  
Wednesday, 24-03-04

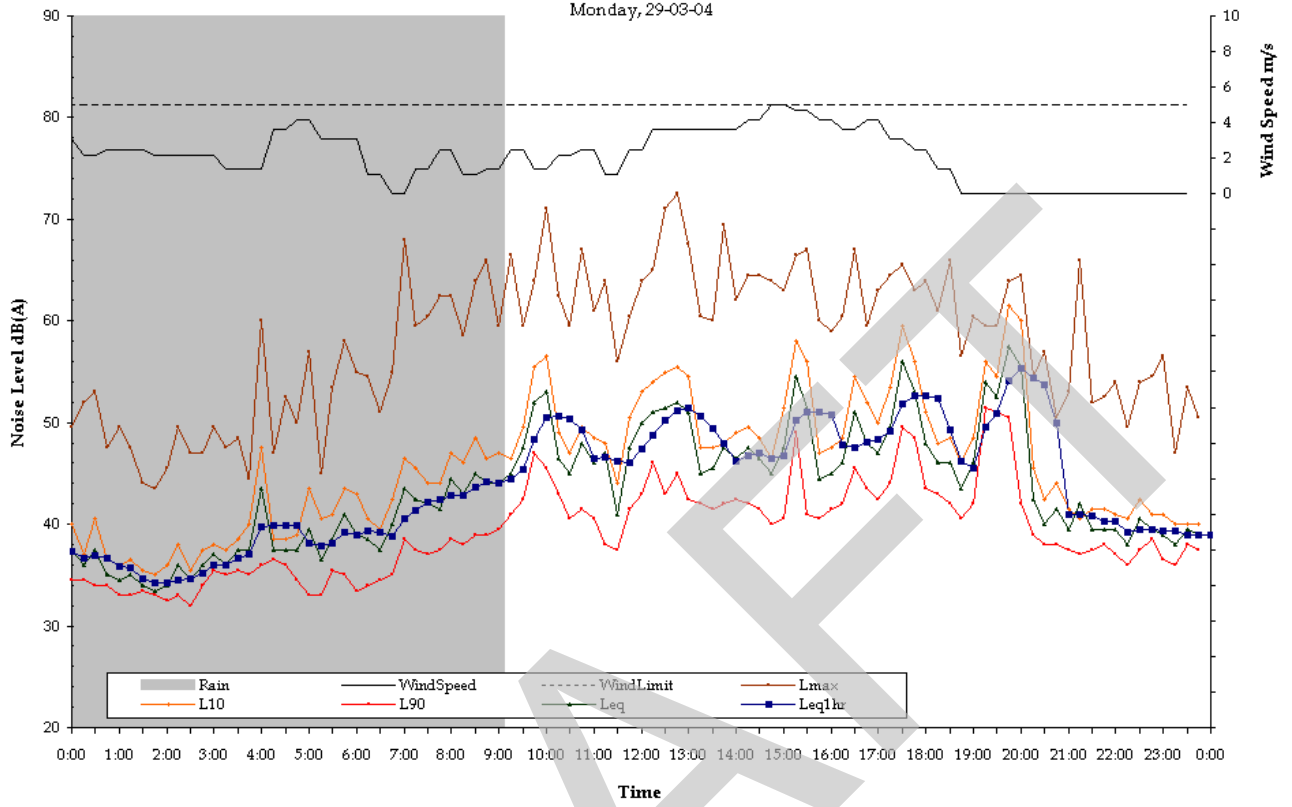


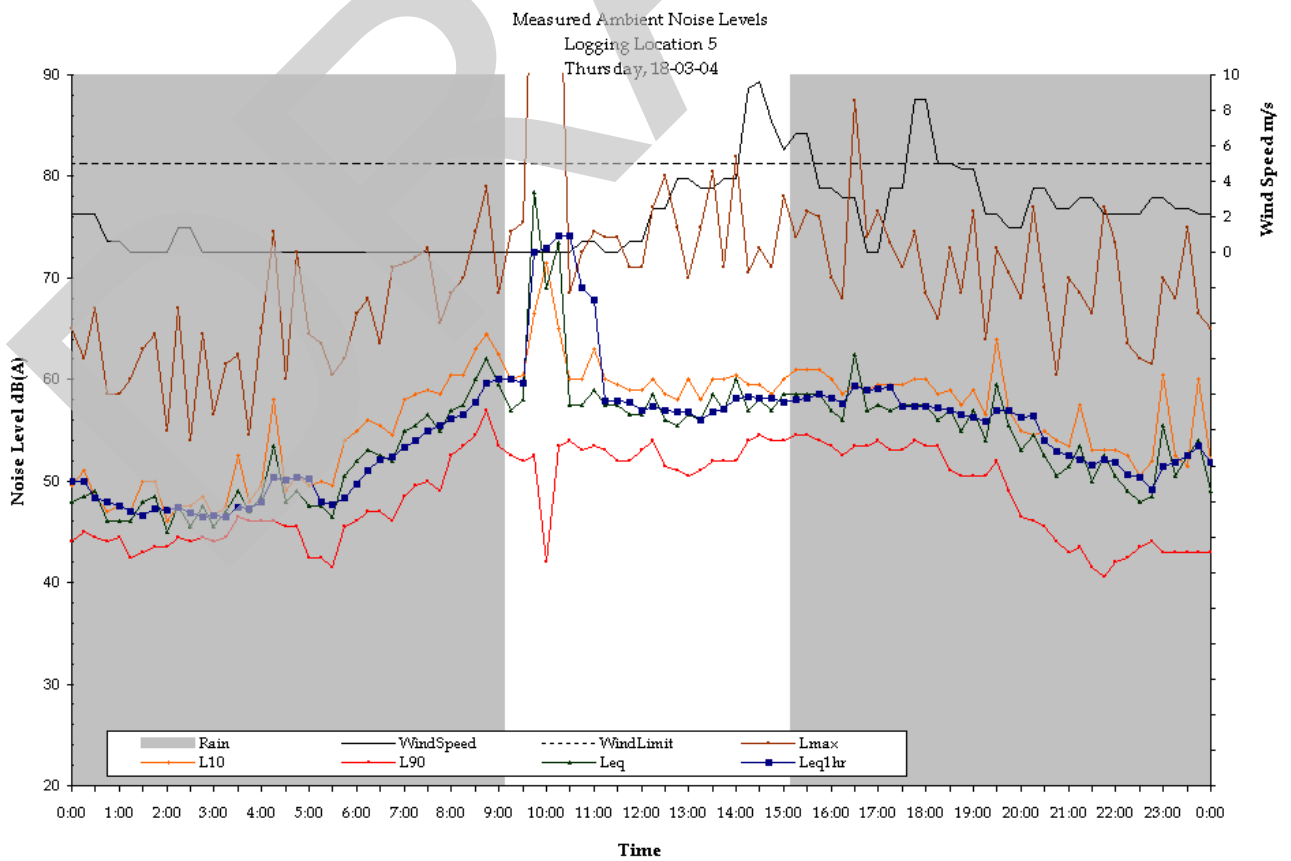
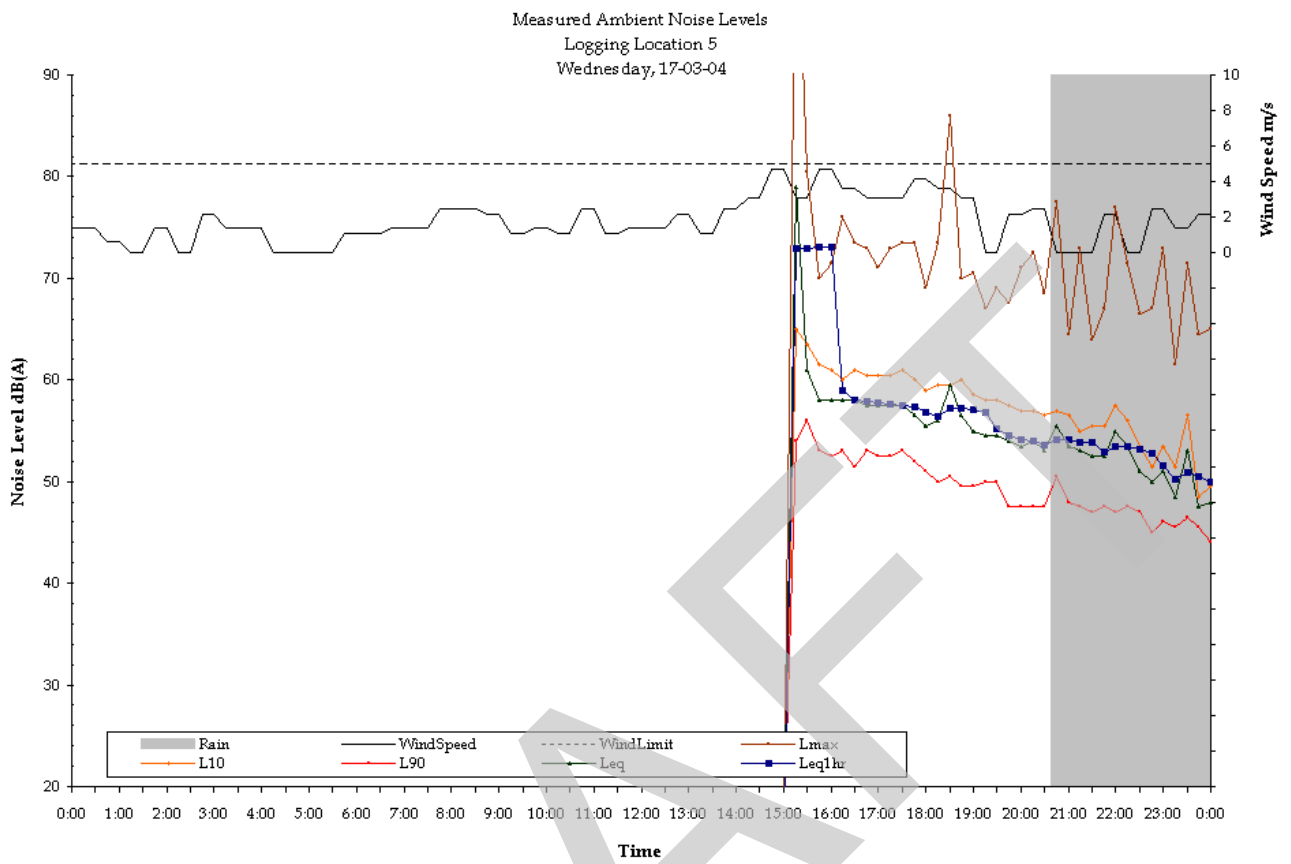


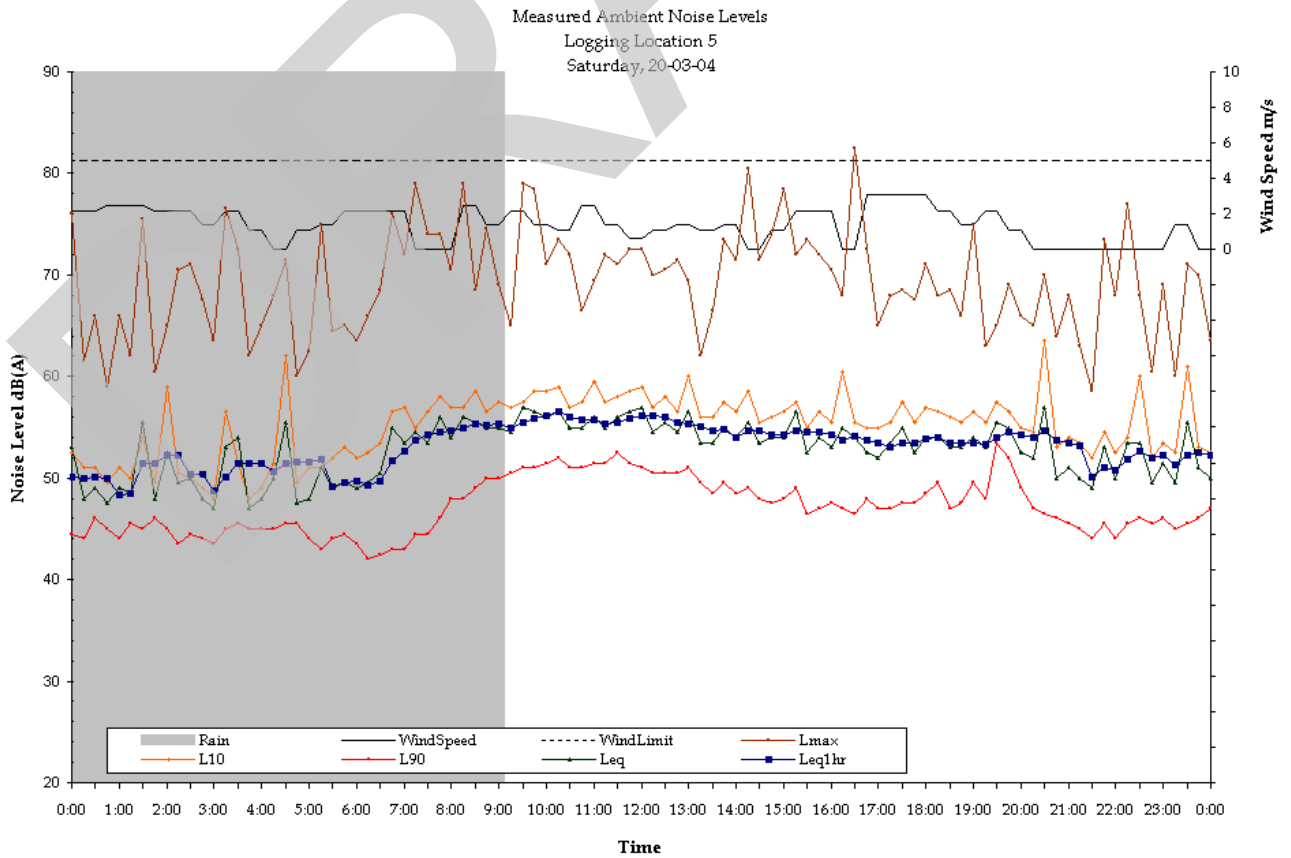
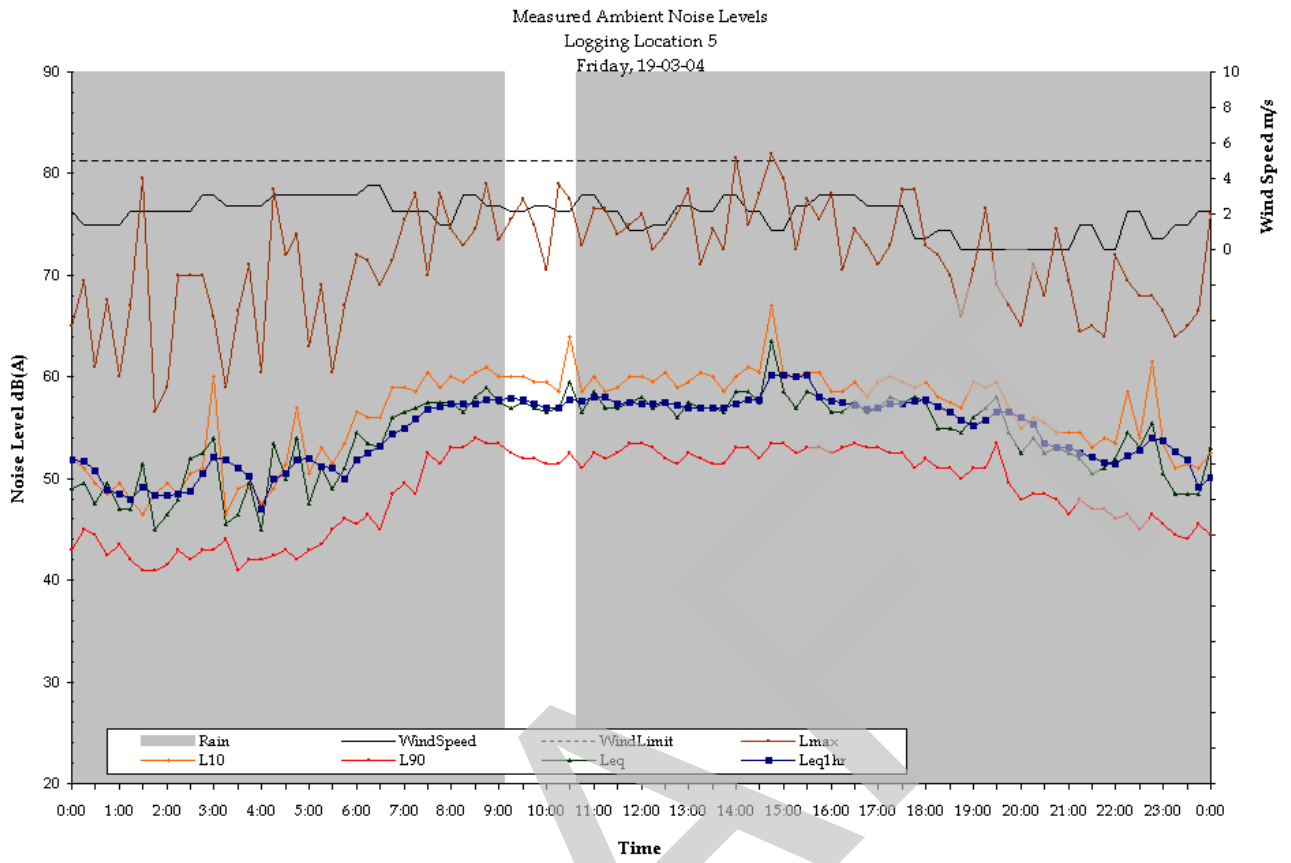




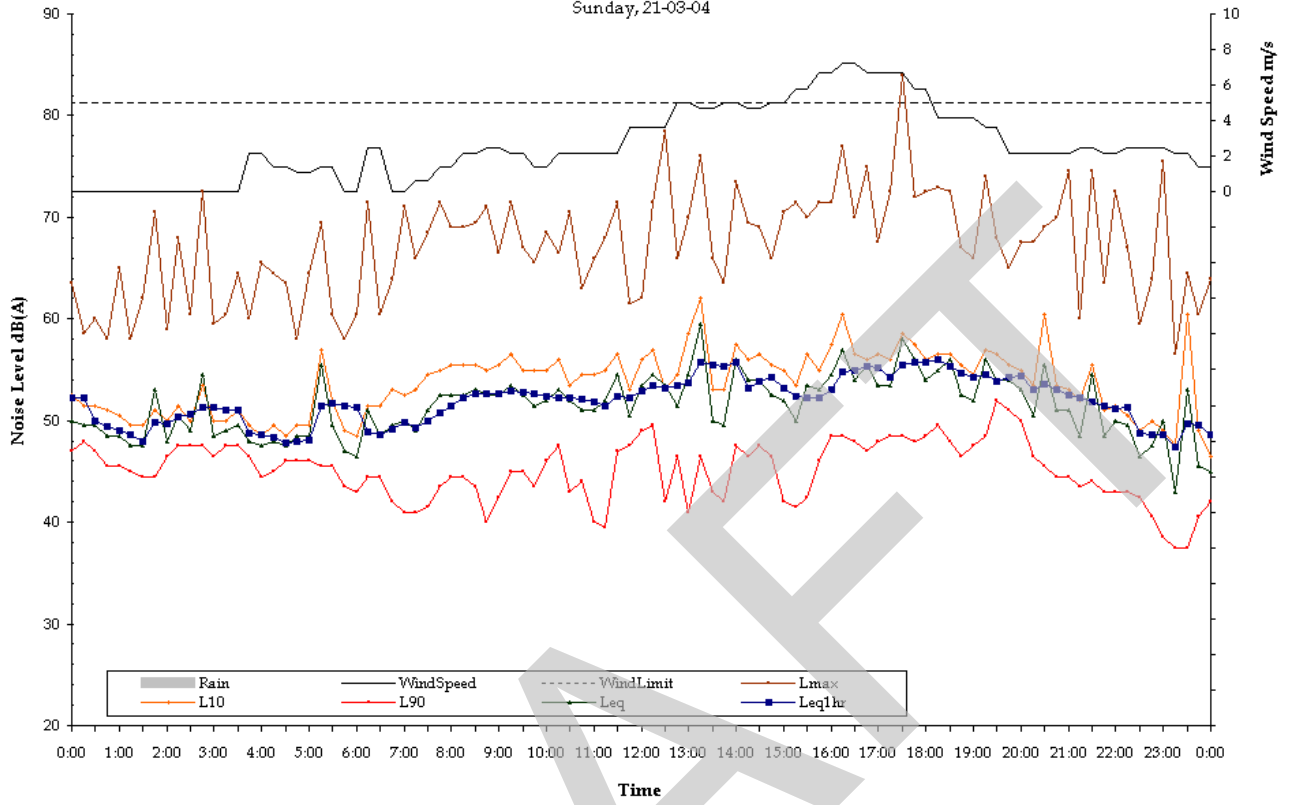
Measured Ambient Noise Levels  
Logging Location 4  
Monday, 29-03-04



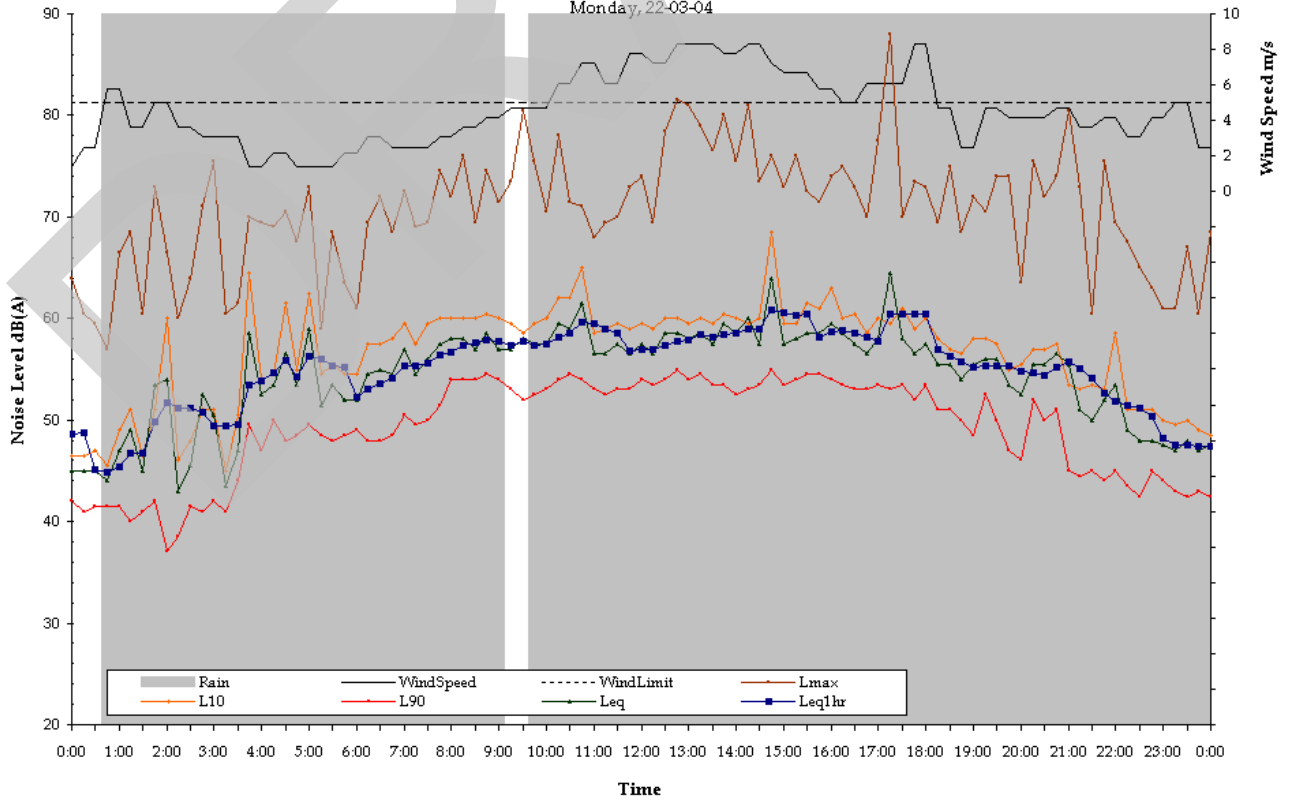


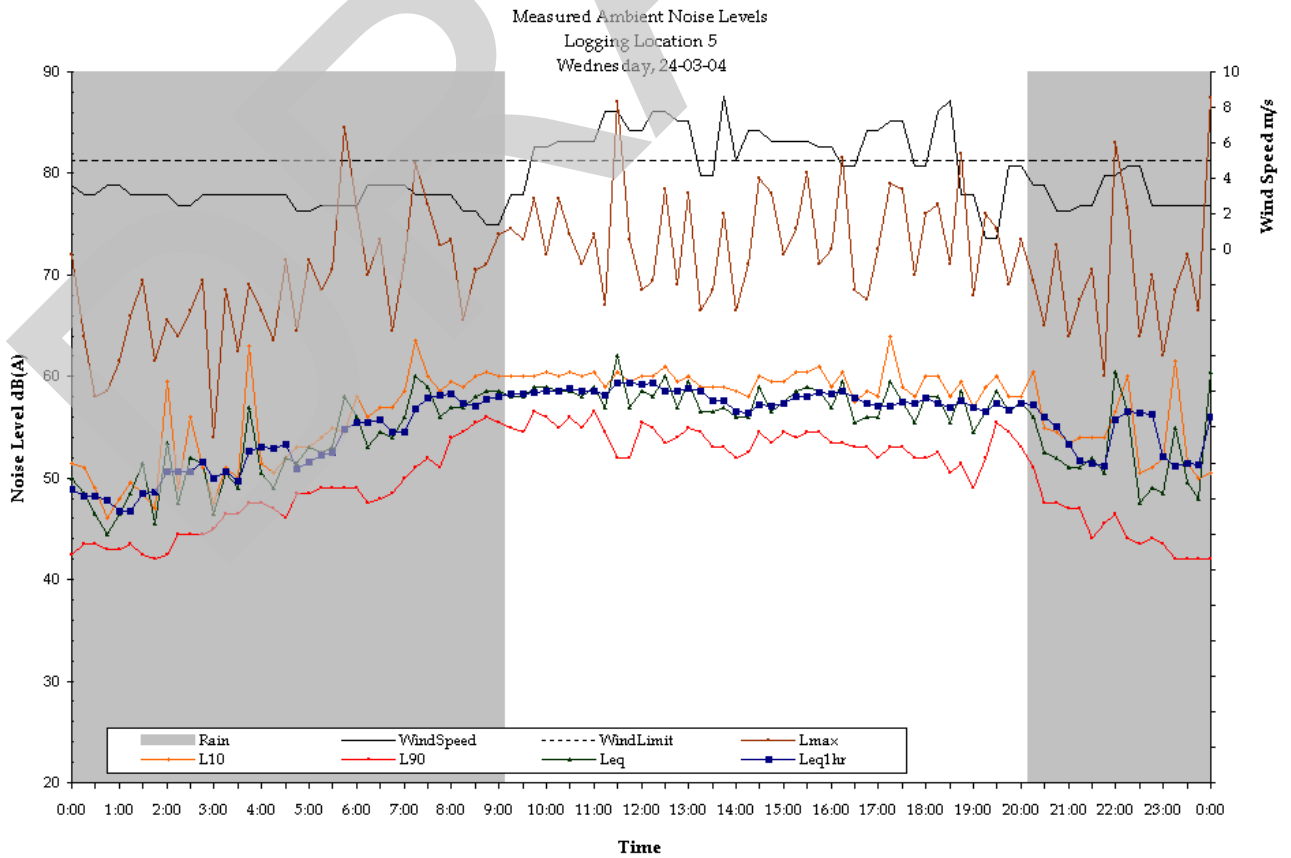
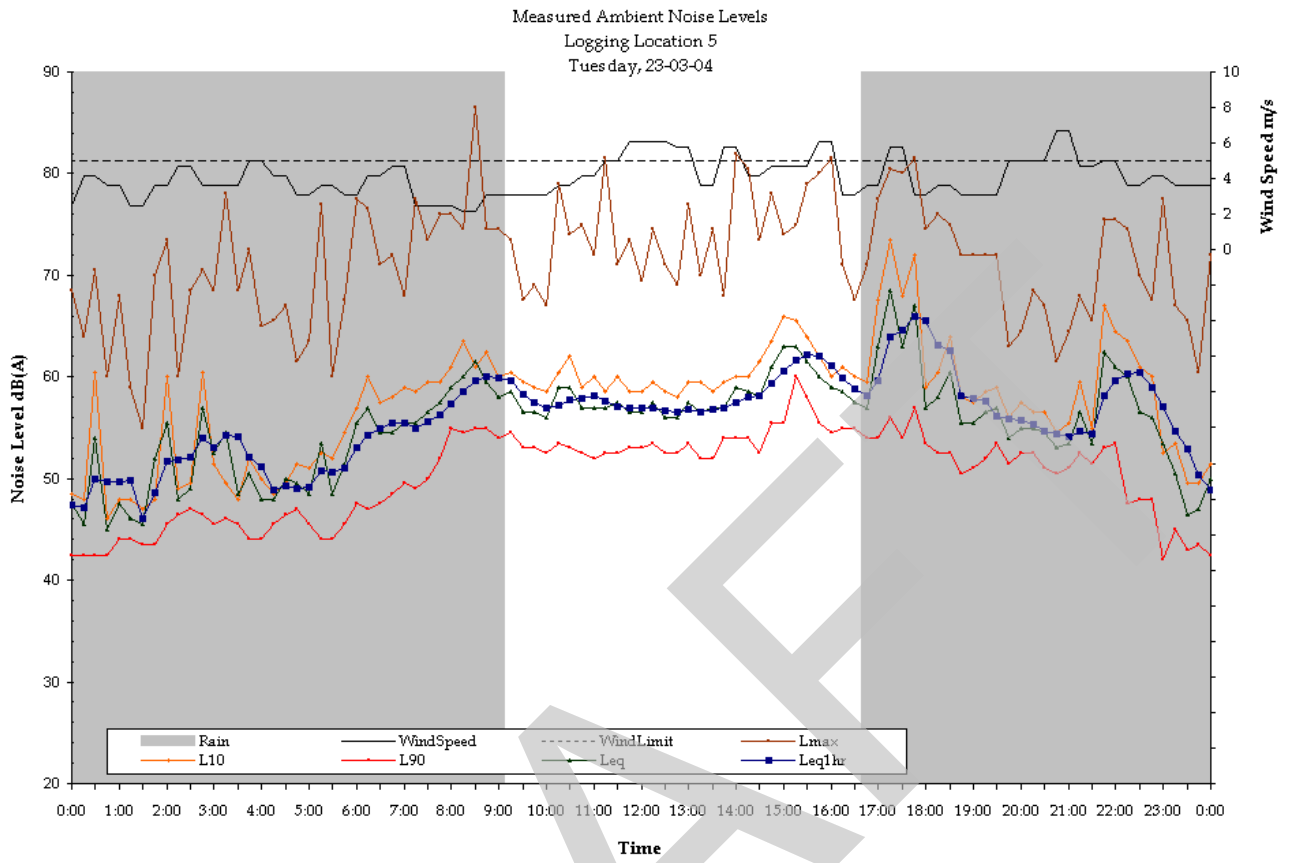


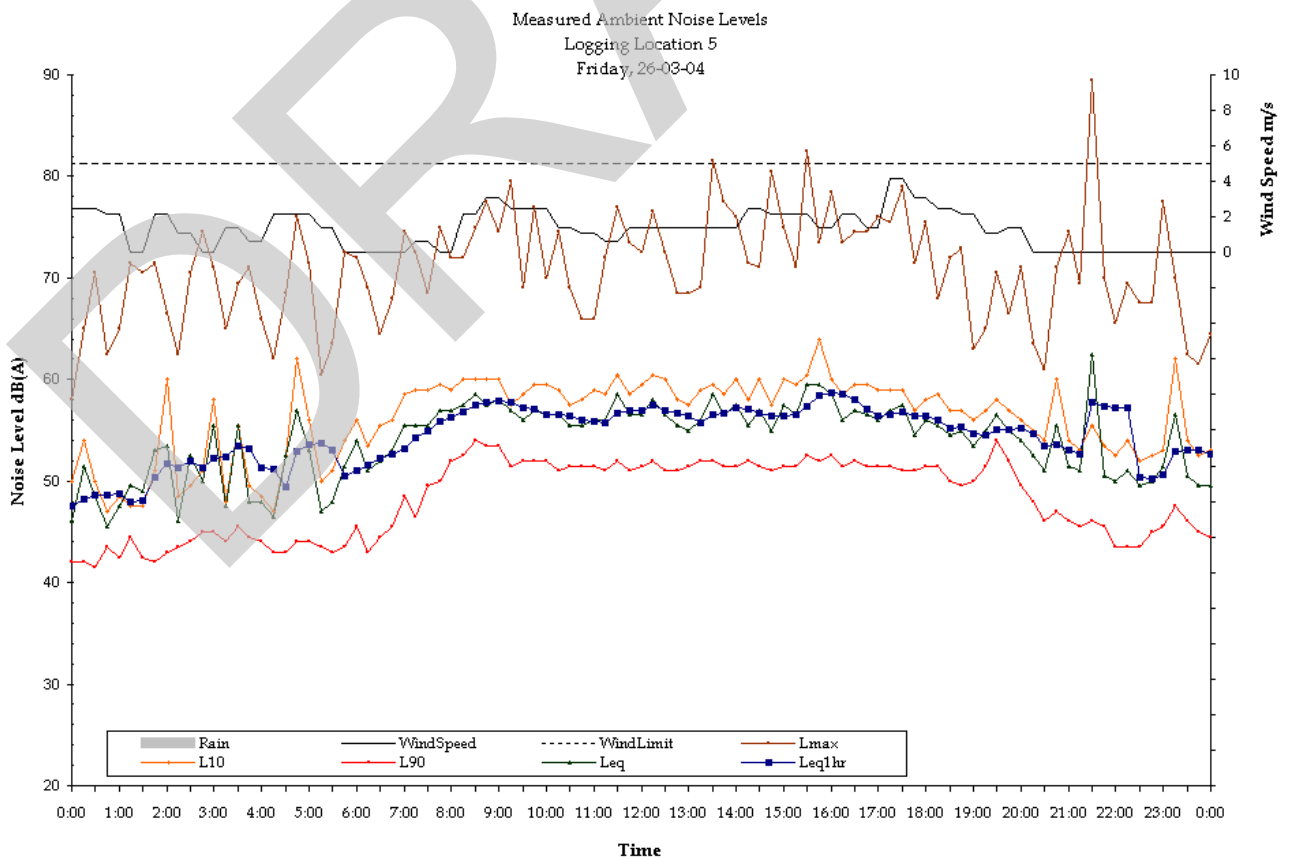
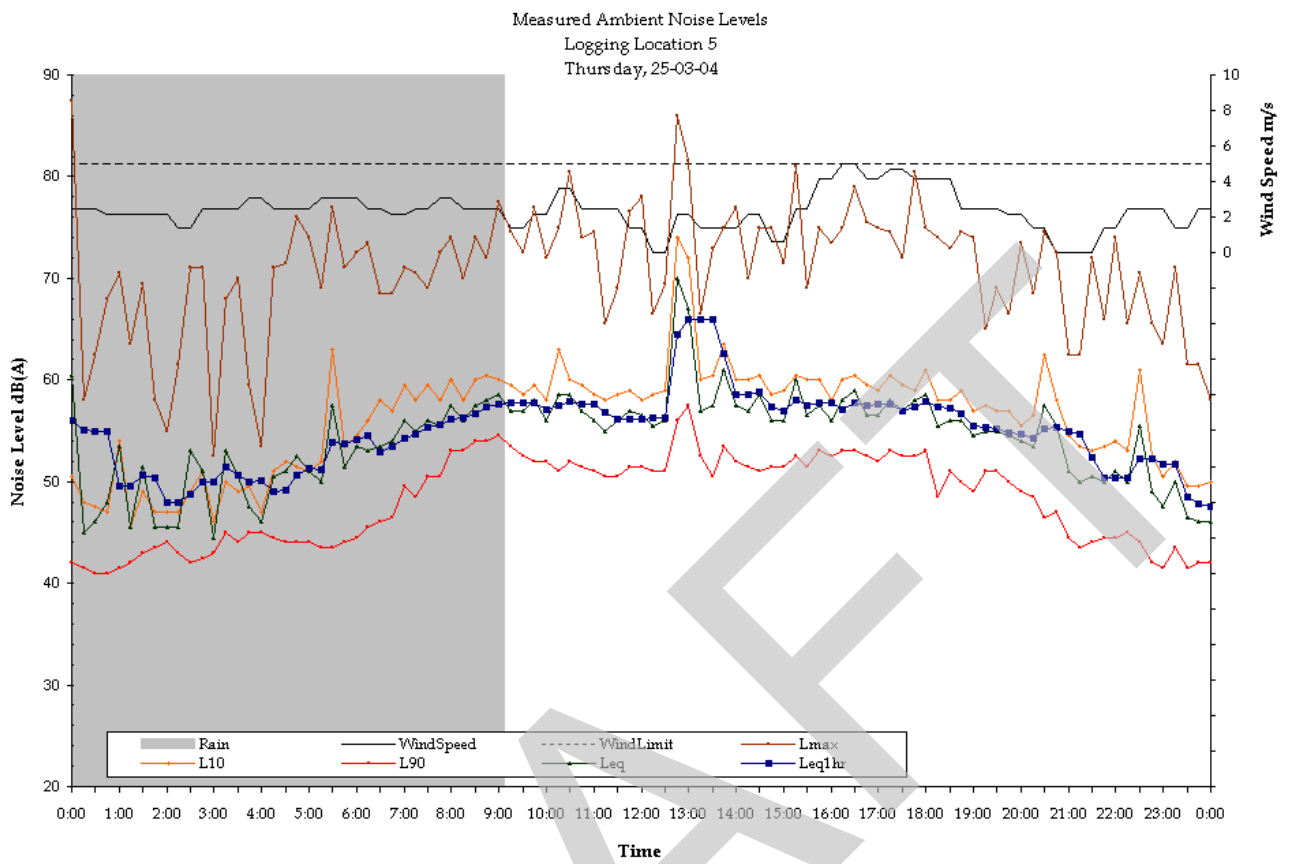
Measured Ambient Noise Levels  
 Logging Location 5  
 Sunday, 21-03-04

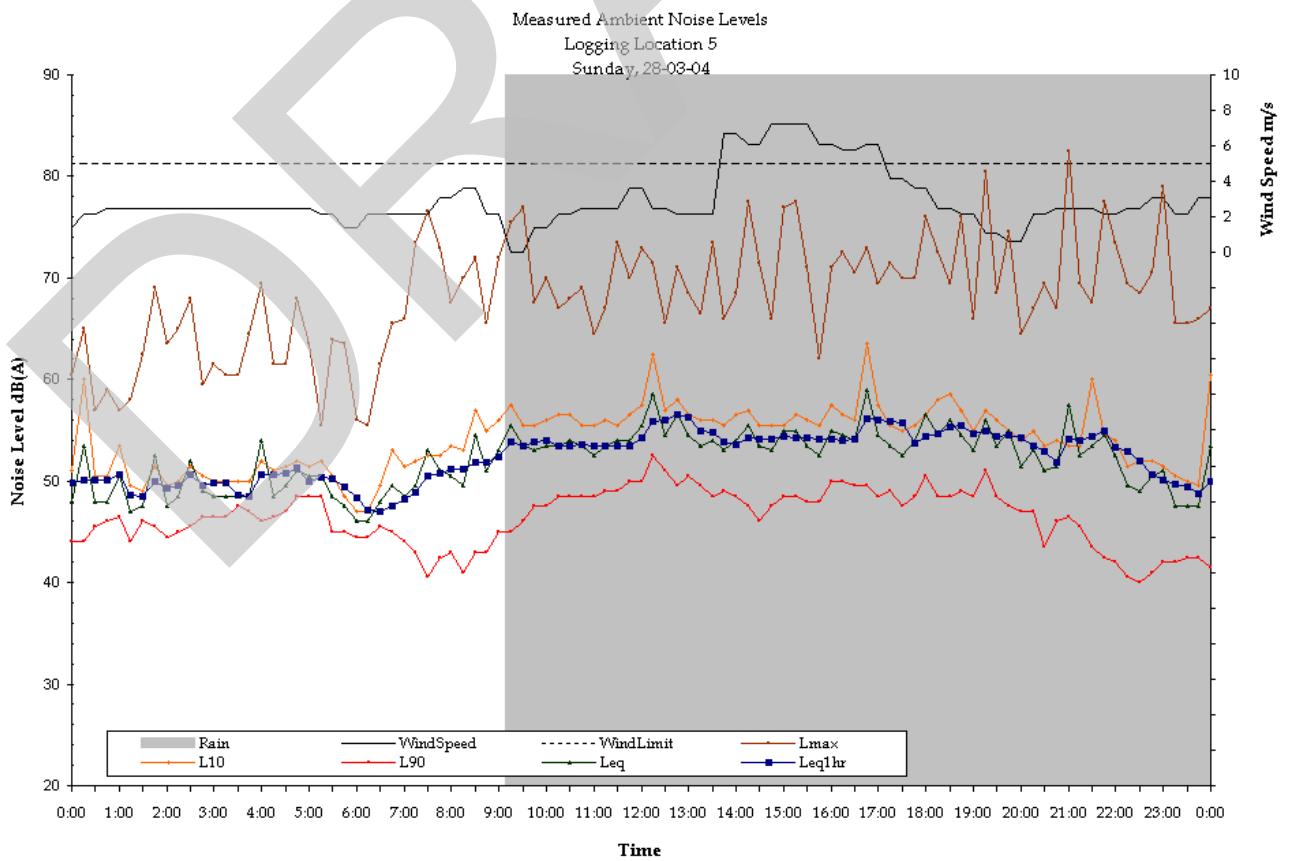
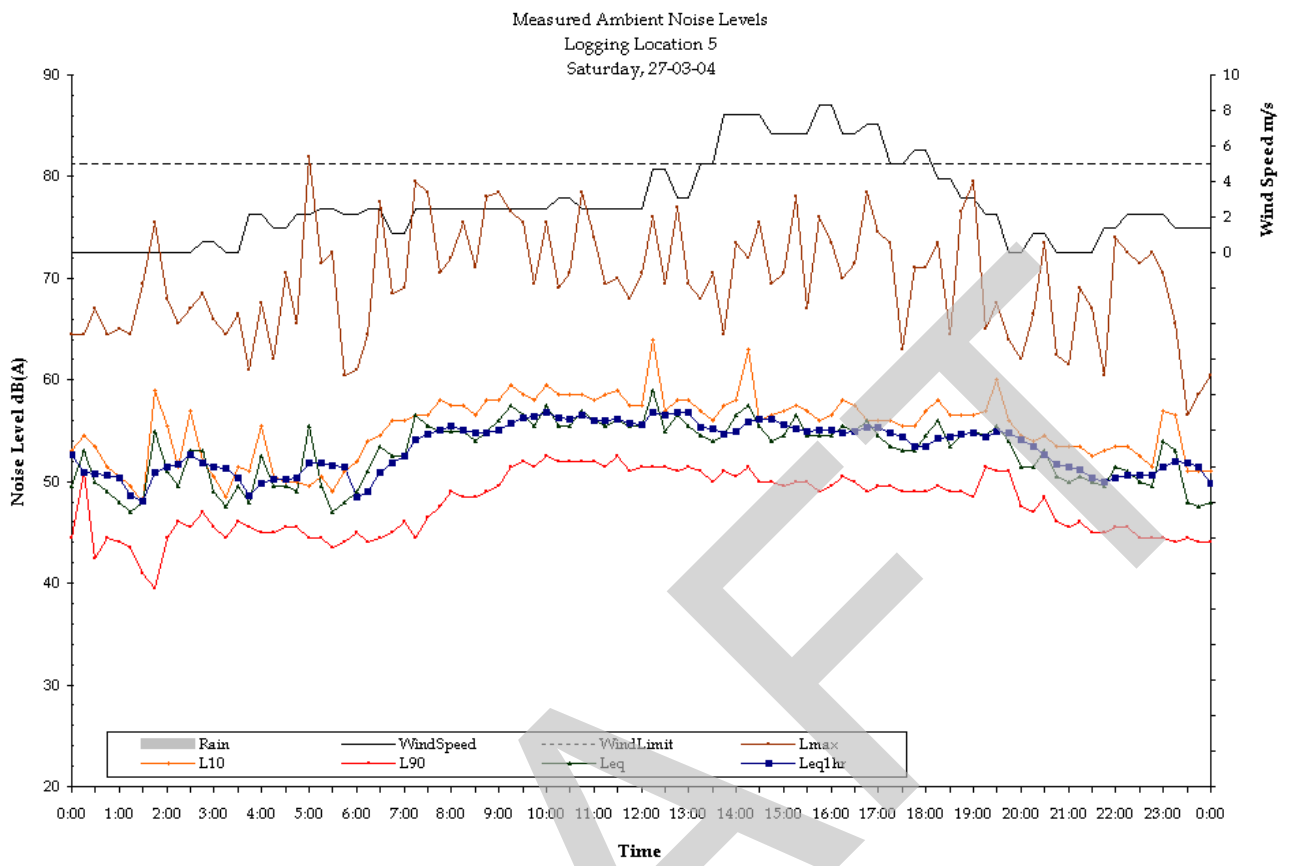


Measured Ambient Noise Levels  
 Logging Location 5  
 Monday, 22-03-04

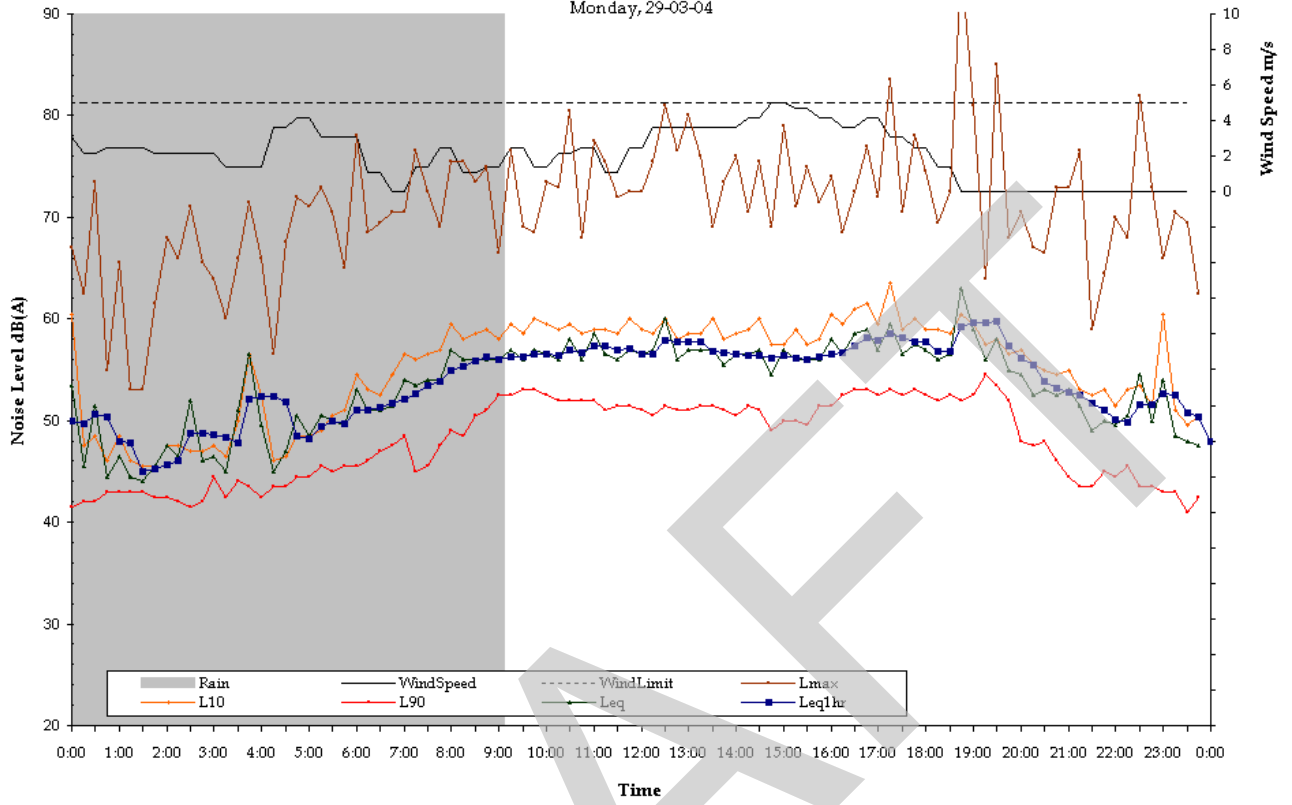




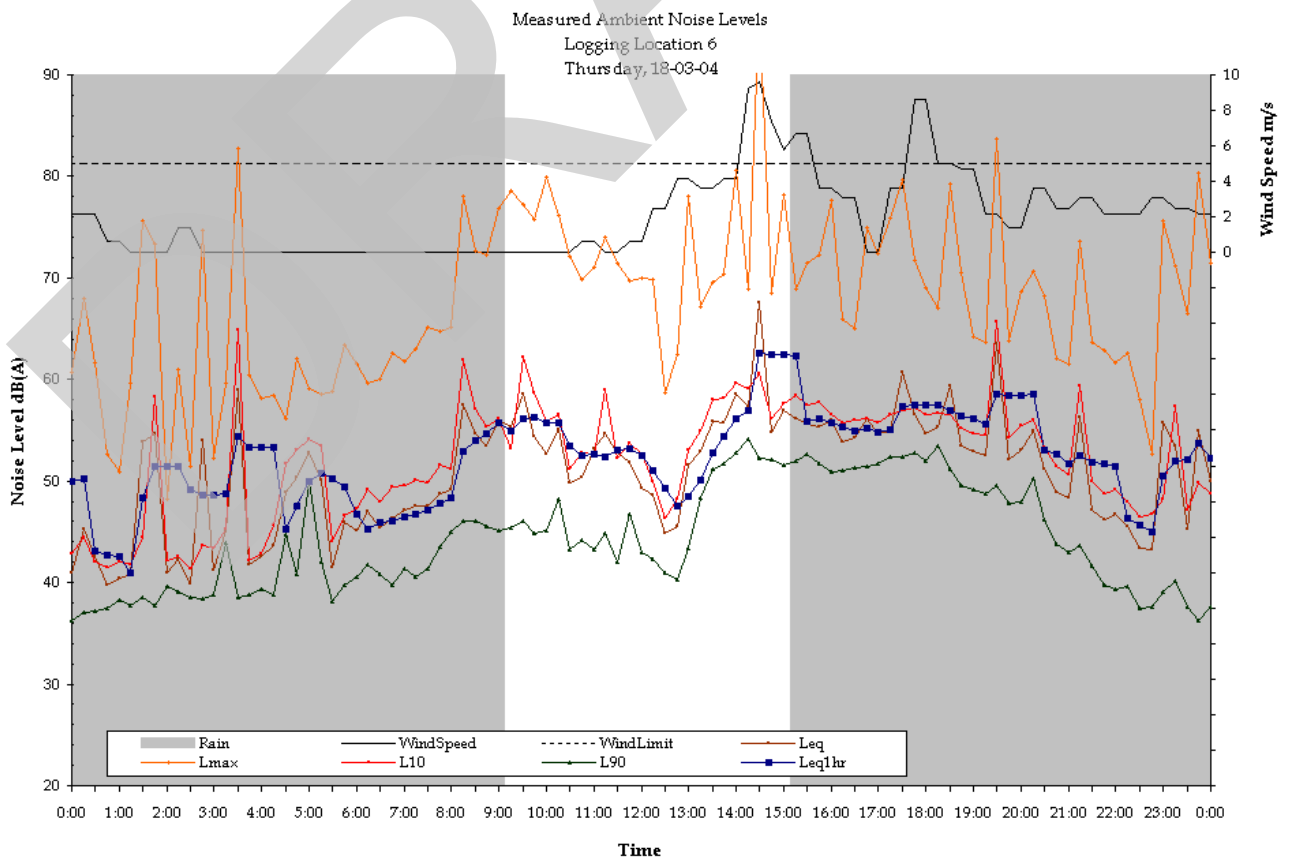
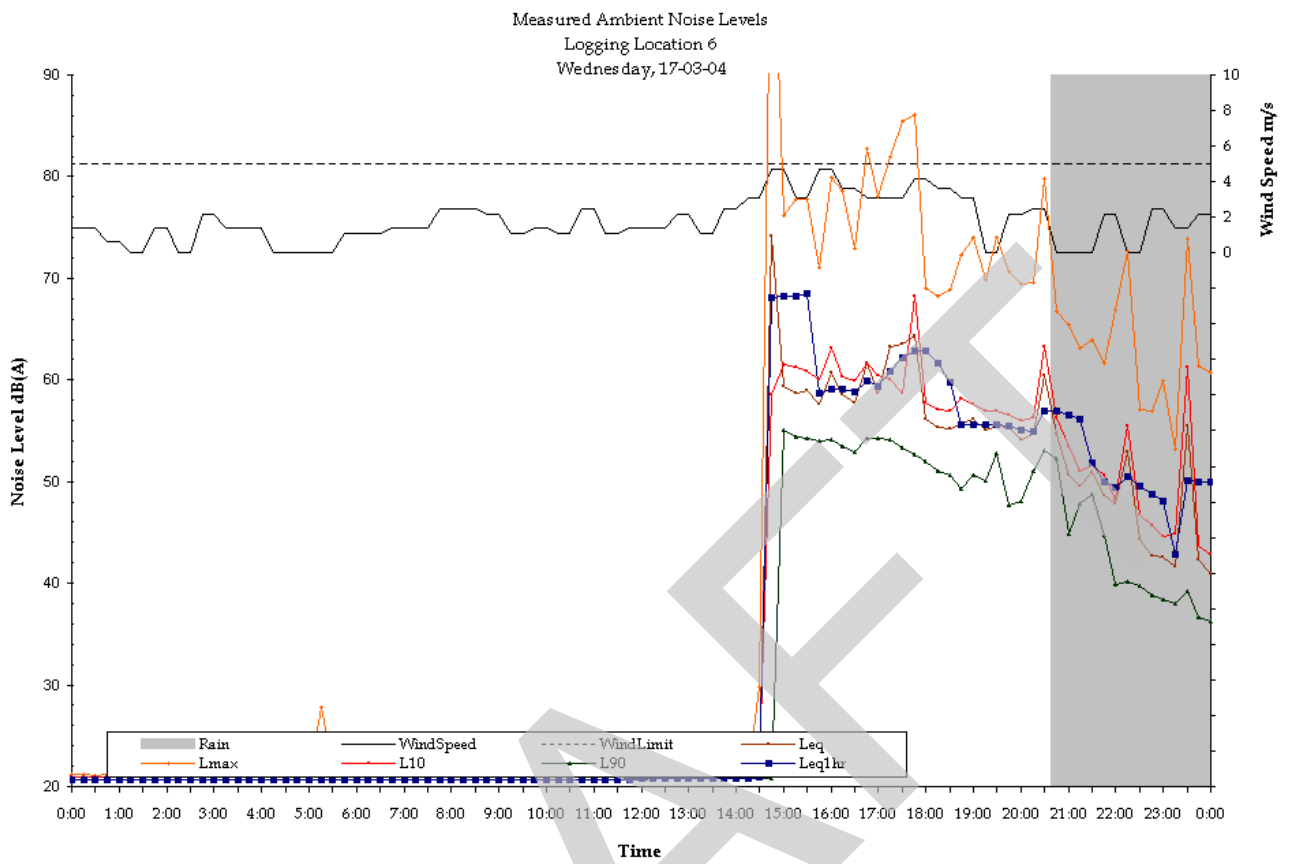


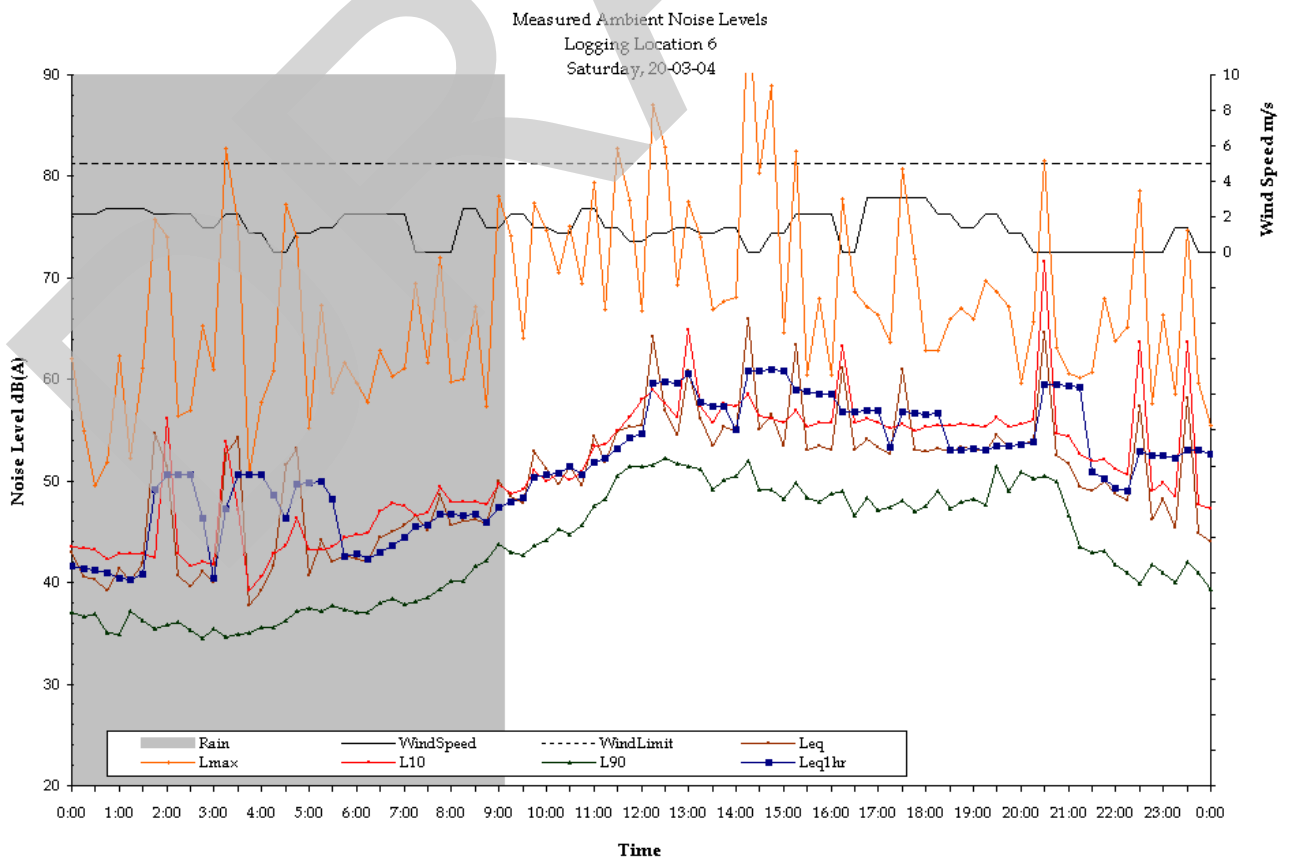
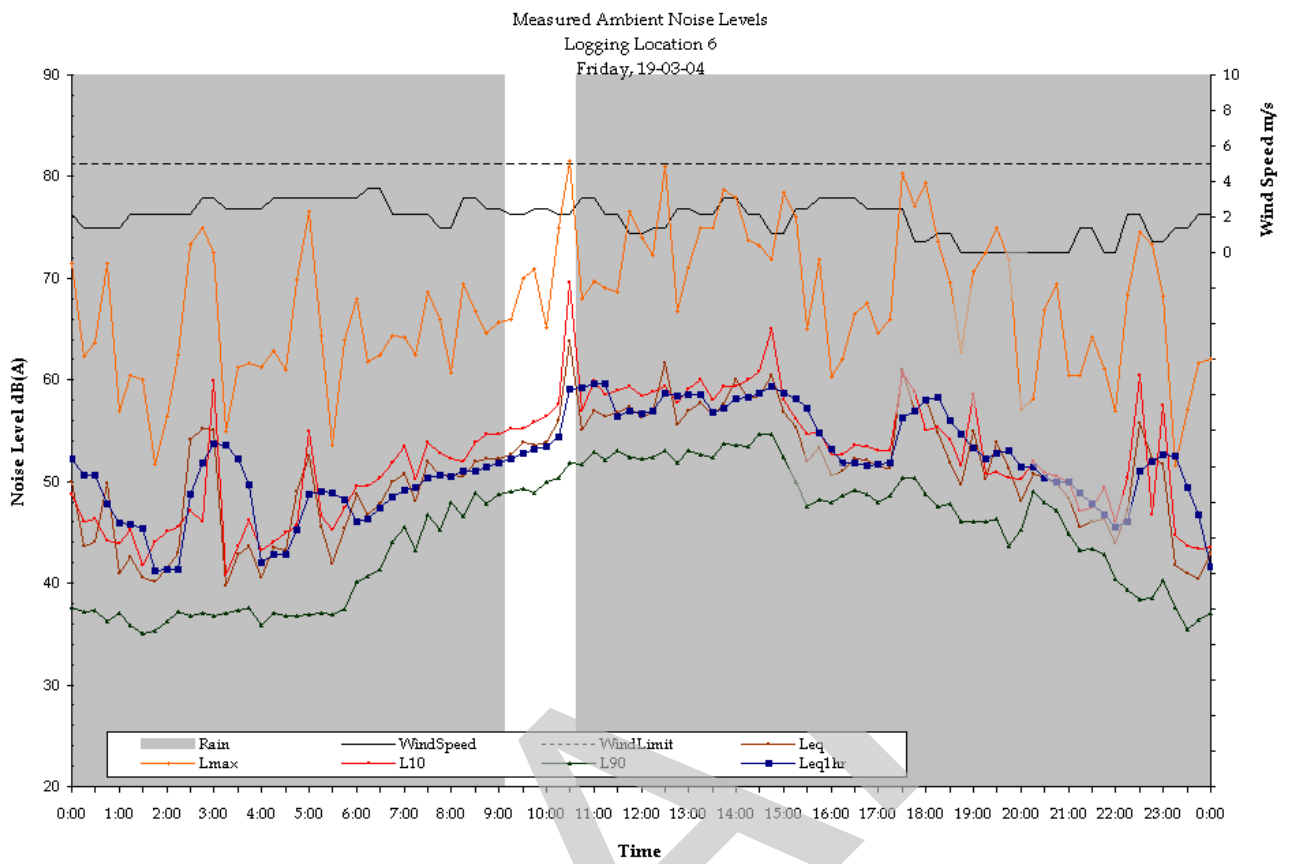


Measured Ambient Noise Levels  
Logging Location 5  
Monday, 29-03-04

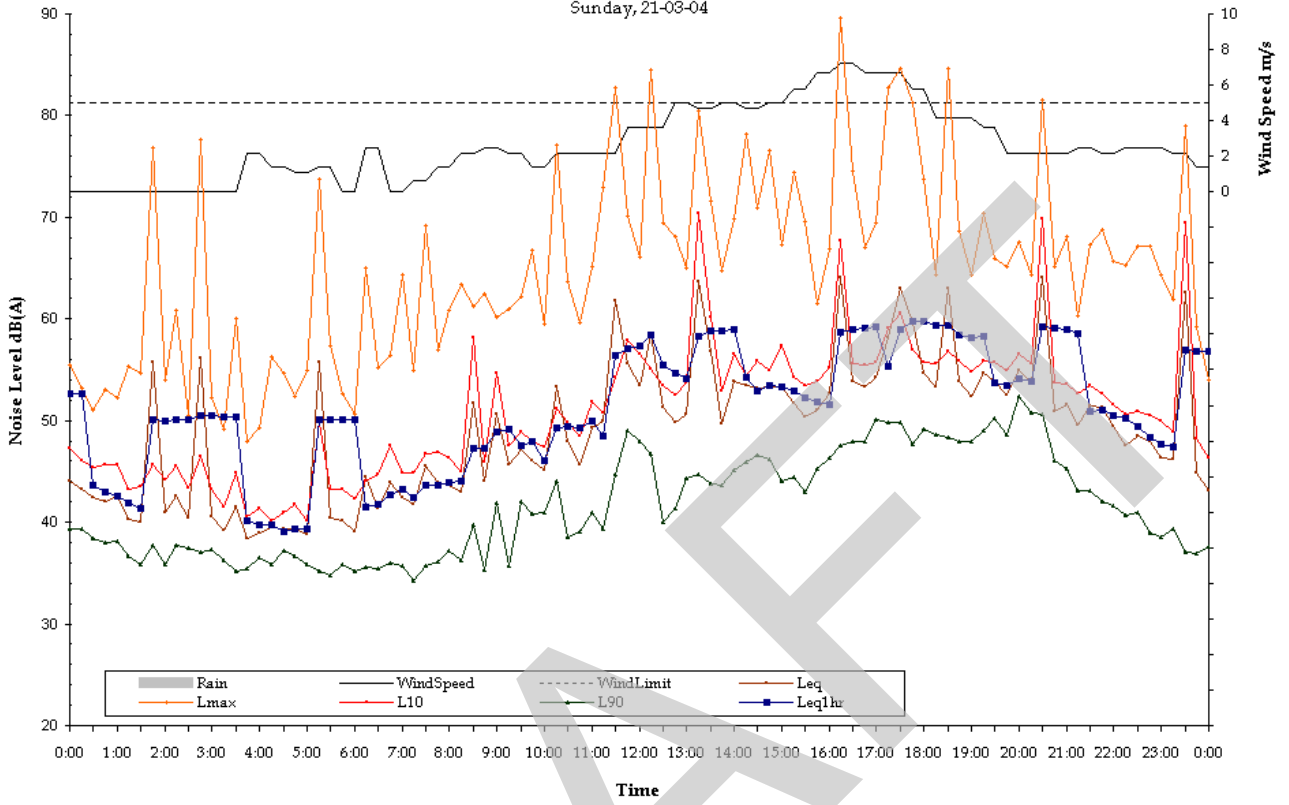




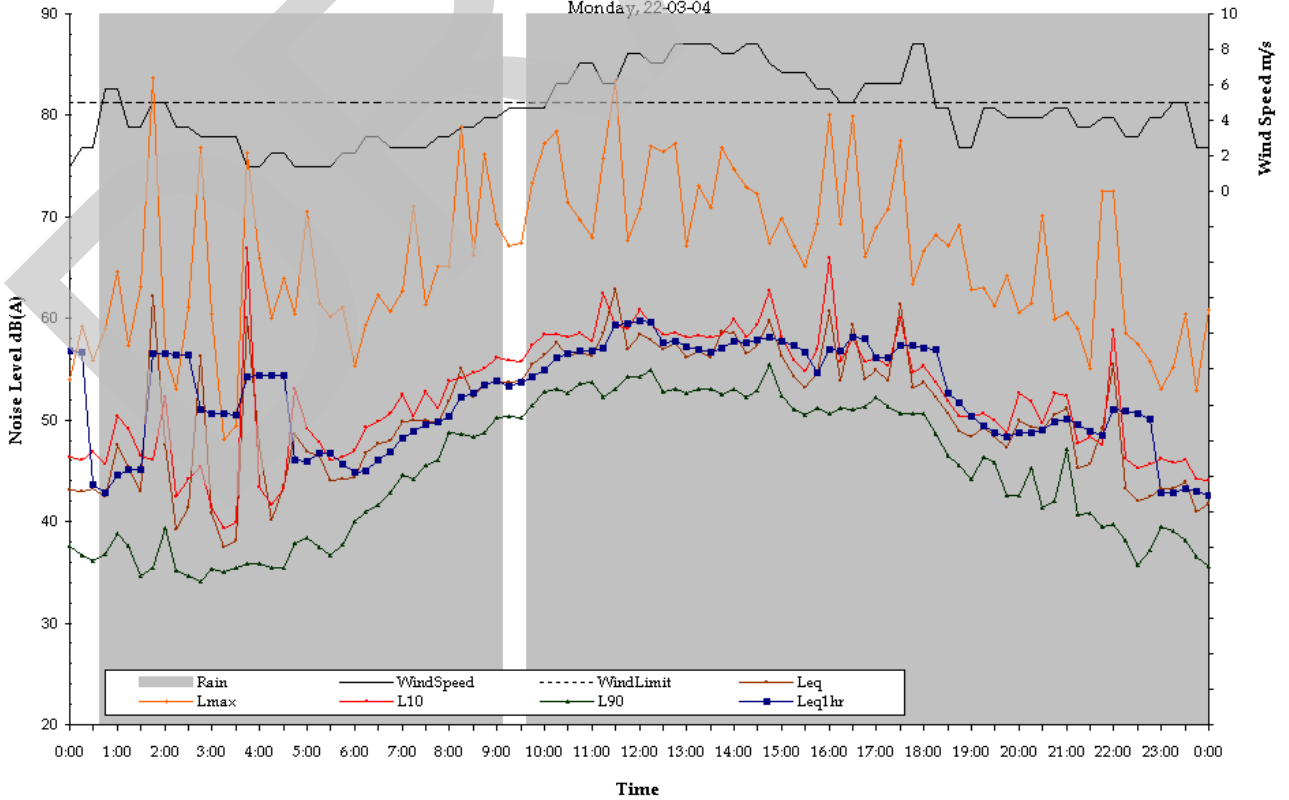


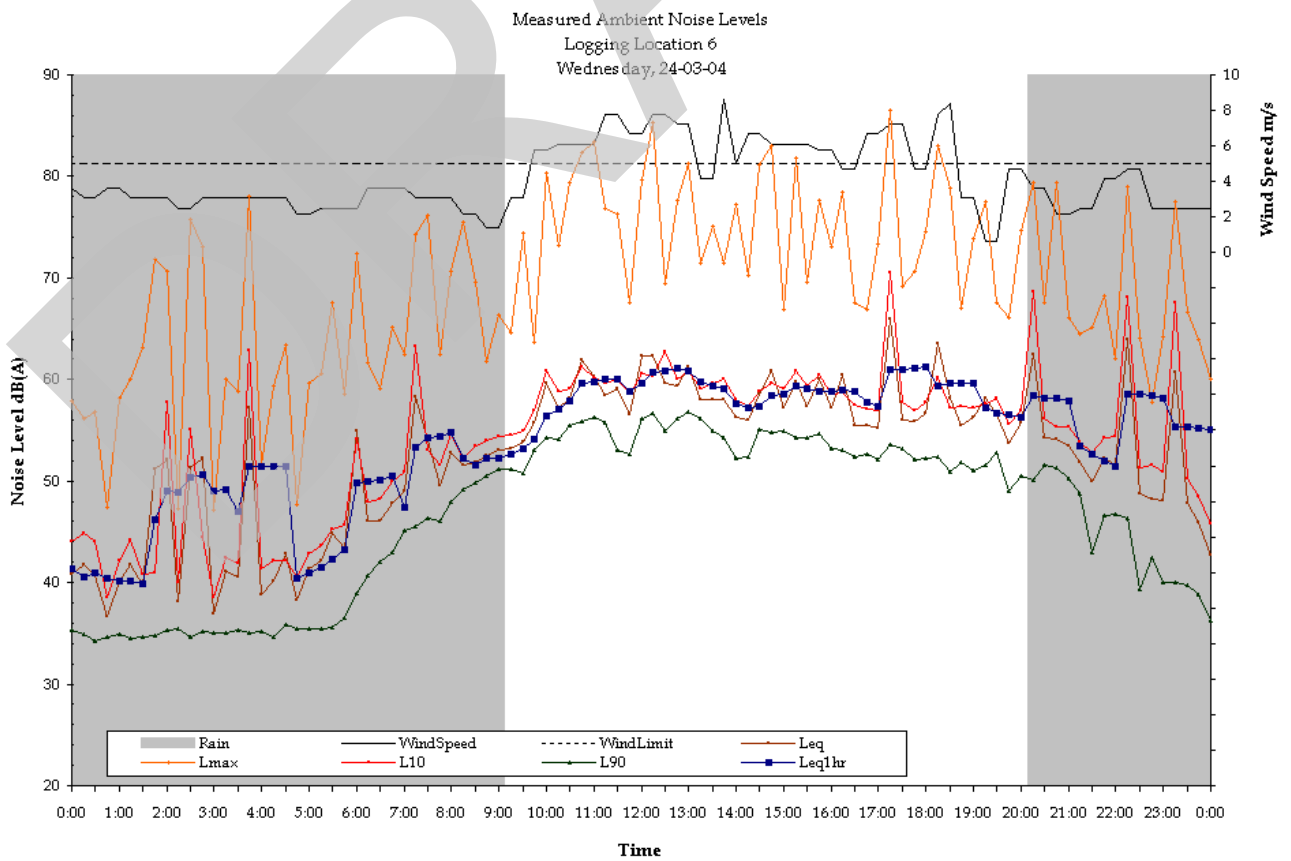
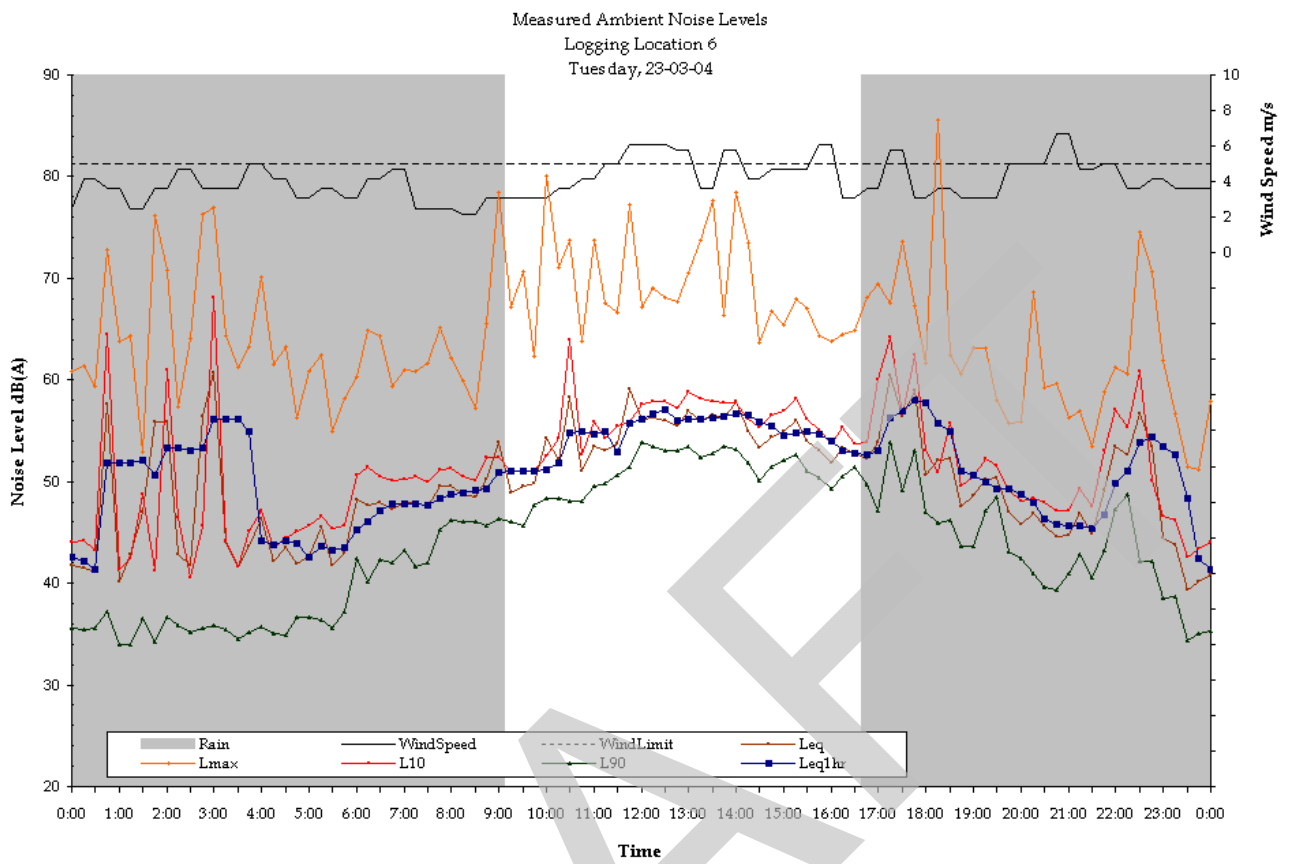


Measured Ambient Noise Levels  
Logging Location 6  
Sunday, 21-03-04

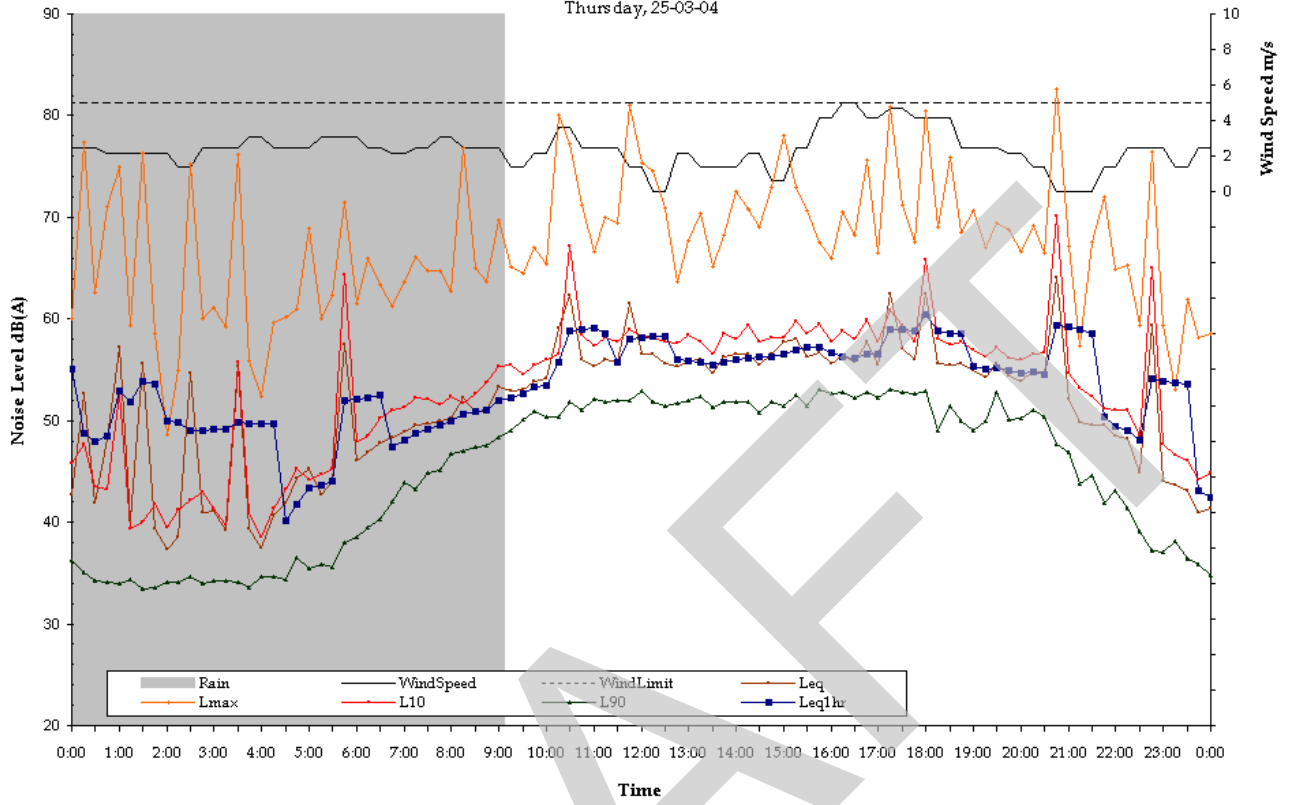


Measured Ambient Noise Levels  
Logging Location 6  
Monday, 22-03-04

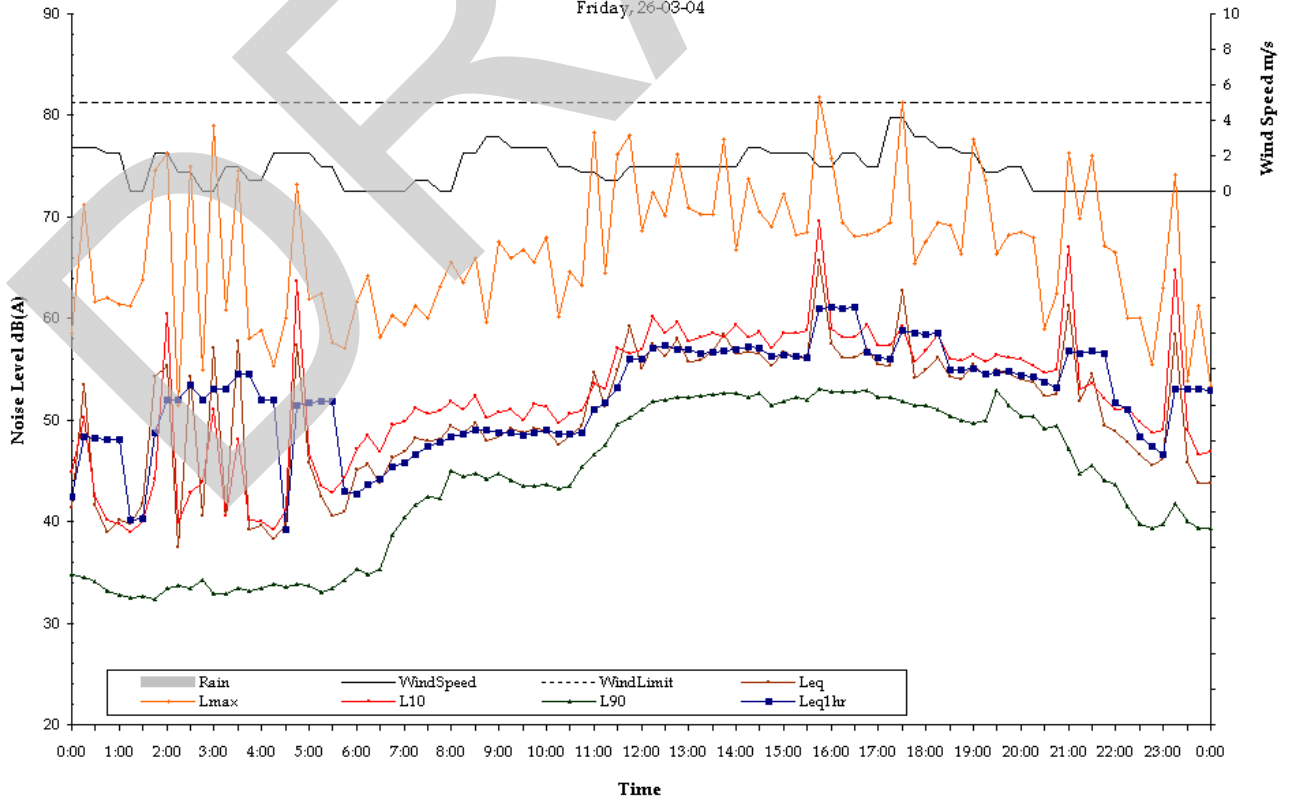




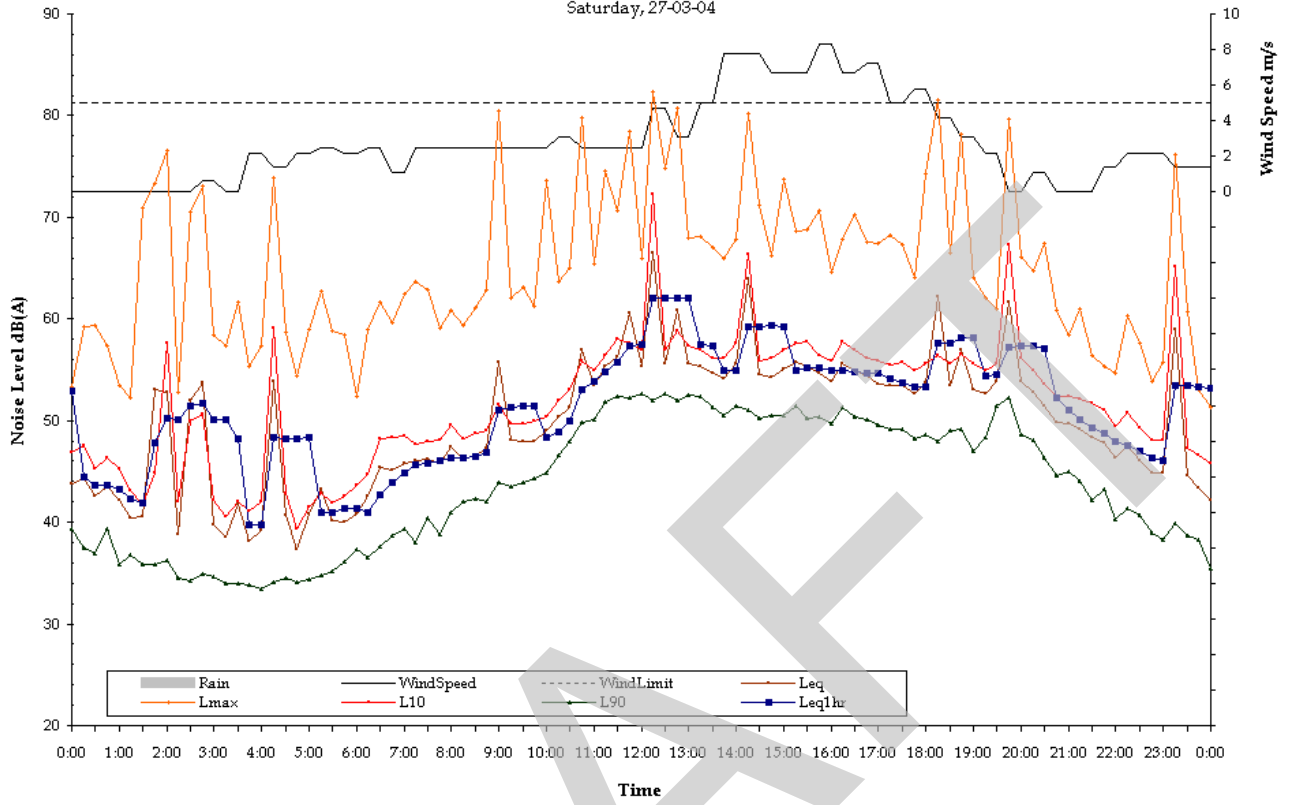
Measured Ambient Noise Levels  
Logging Location 6  
Thursday, 25-03-04



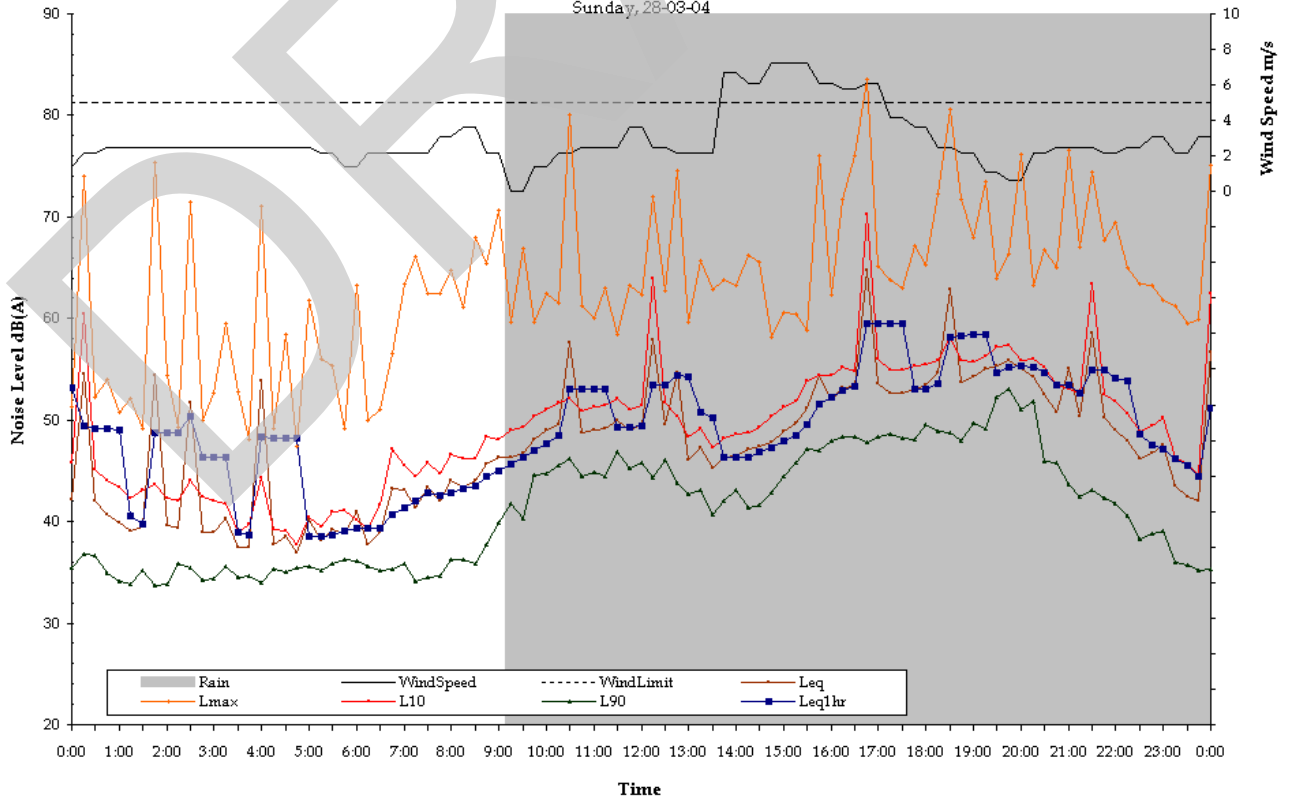
Measured Ambient Noise Levels  
Logging Location 6  
Friday, 26-03-04



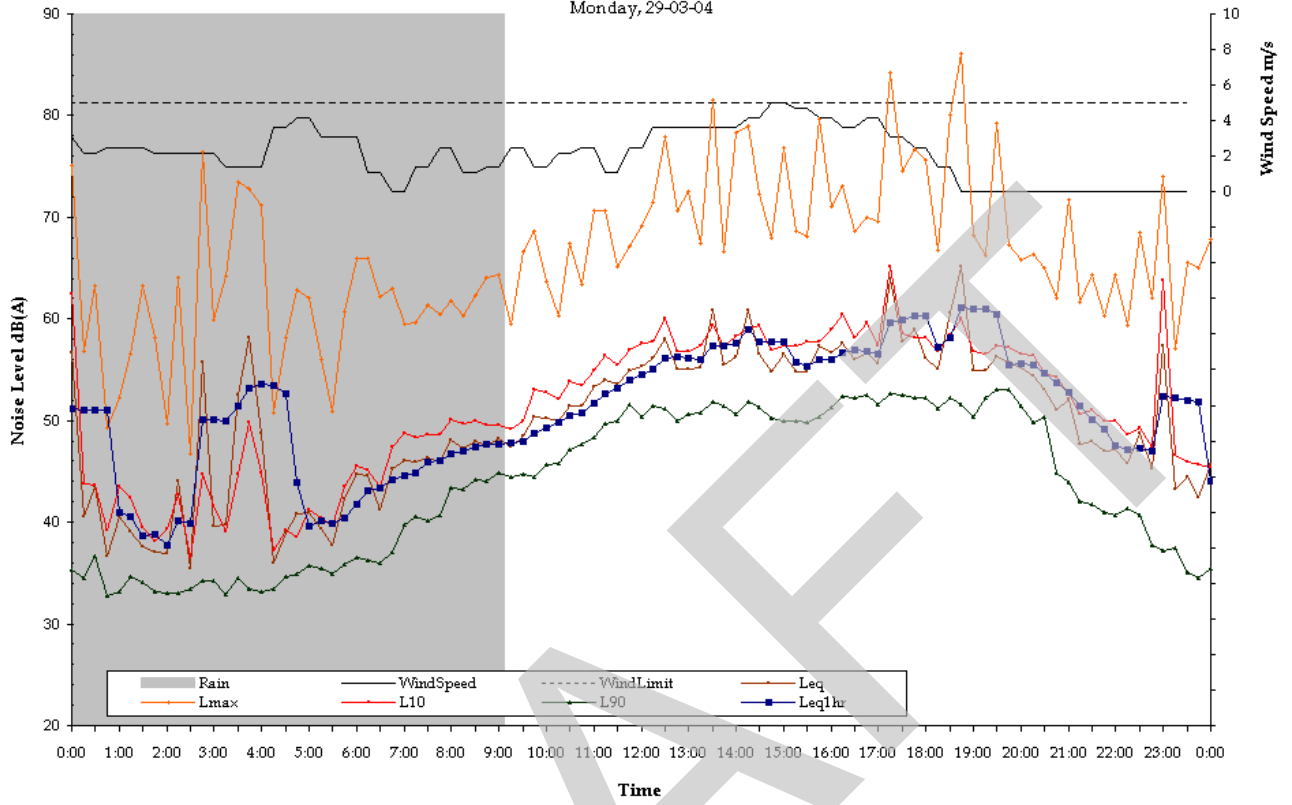
Measured Ambient Noise Levels  
Logging Location 6  
Saturday, 27-03-04

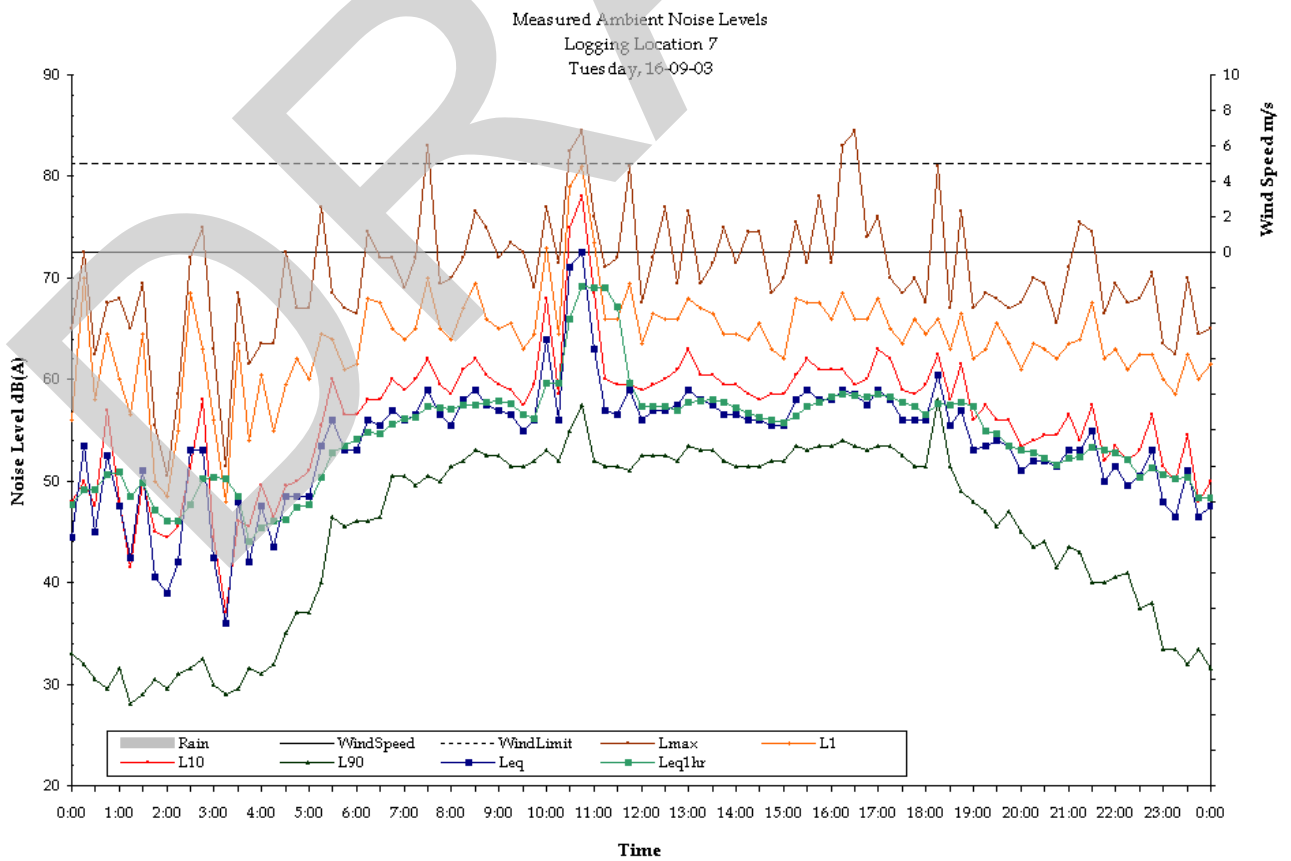
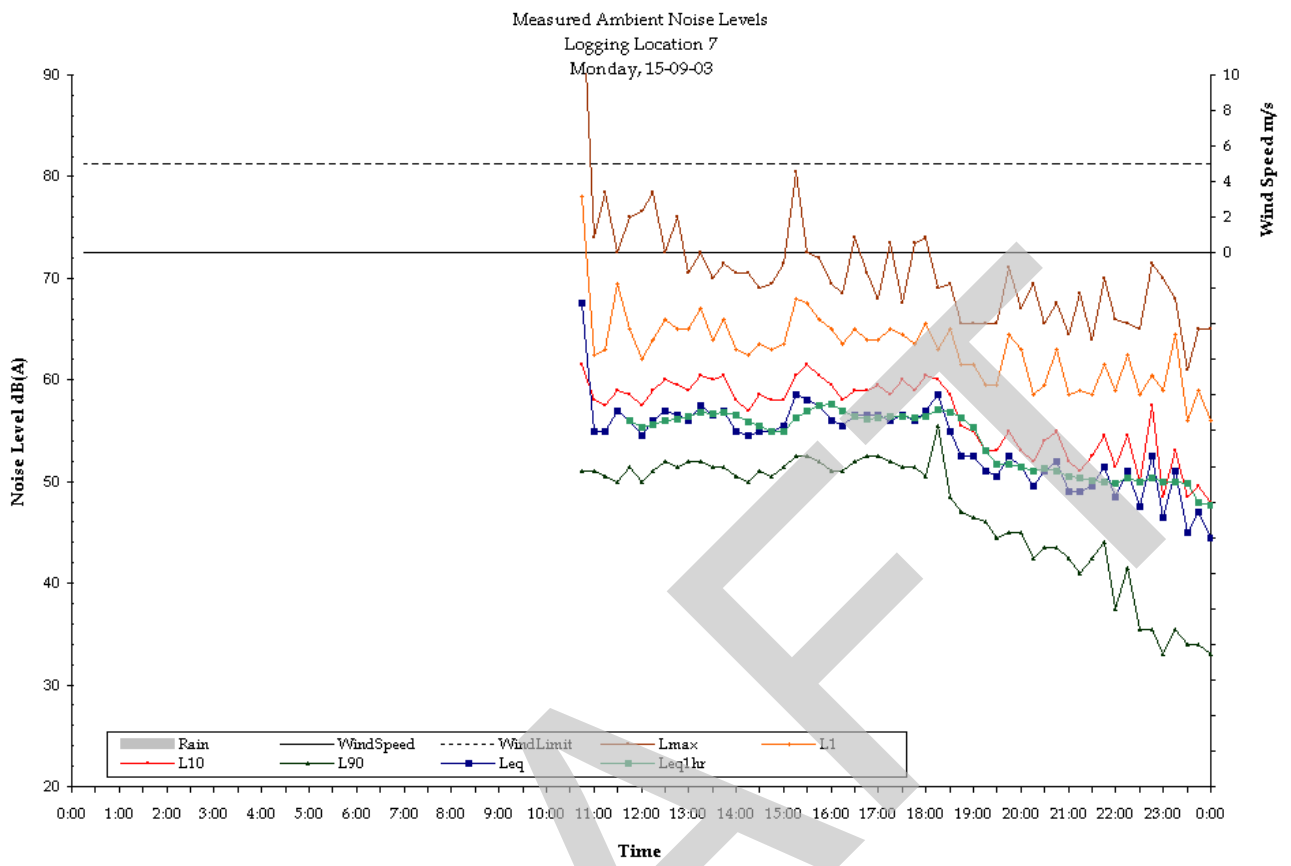


Measured Ambient Noise Levels  
Logging Location 6  
Sunday, 28-03-04



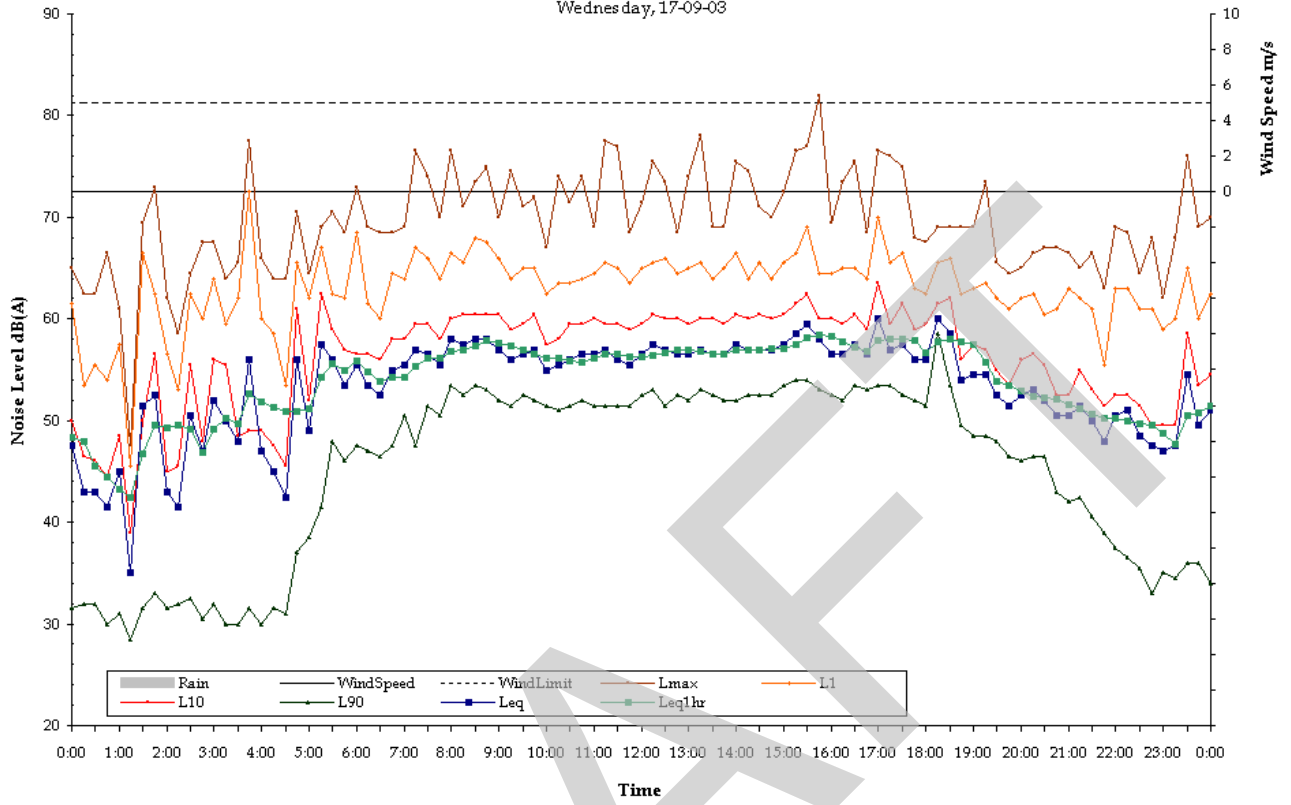
Measured Ambient Noise Levels  
Logging Location 6  
Monday, 29-03-04



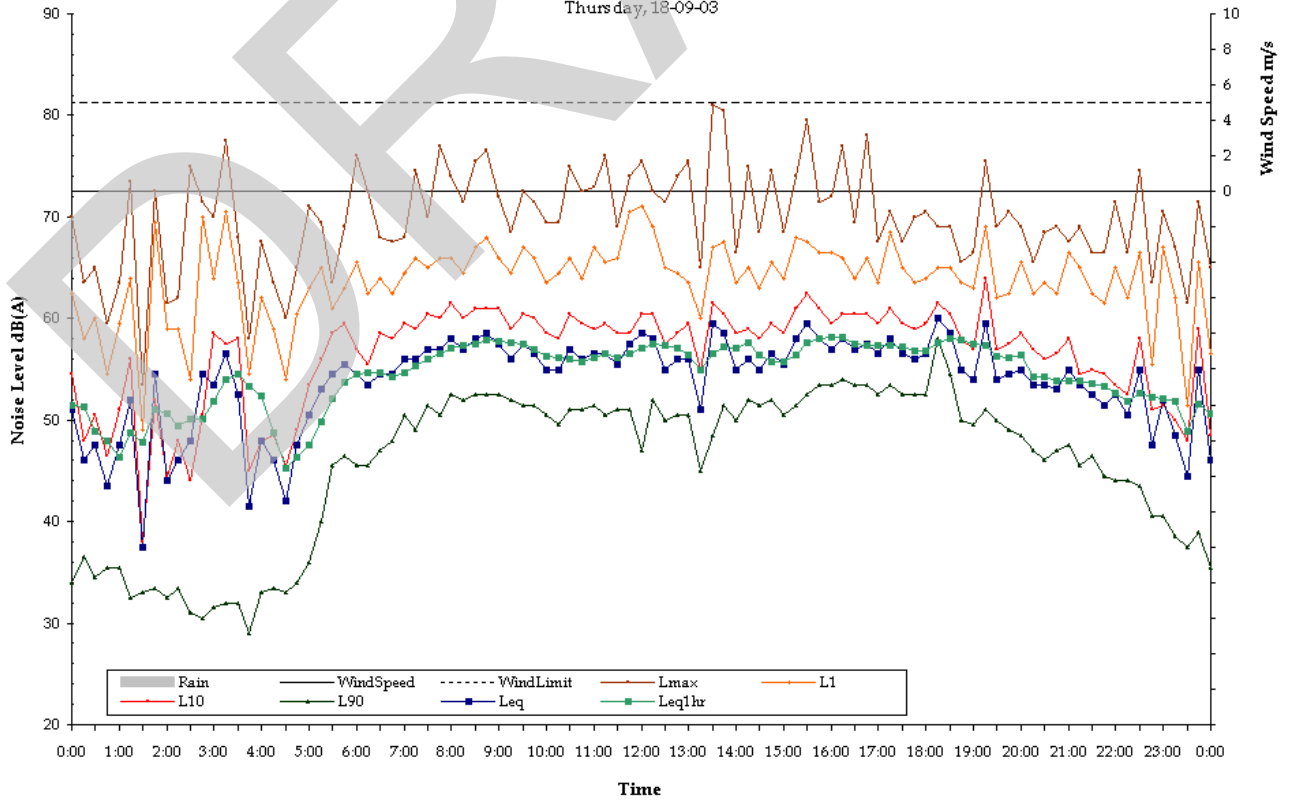




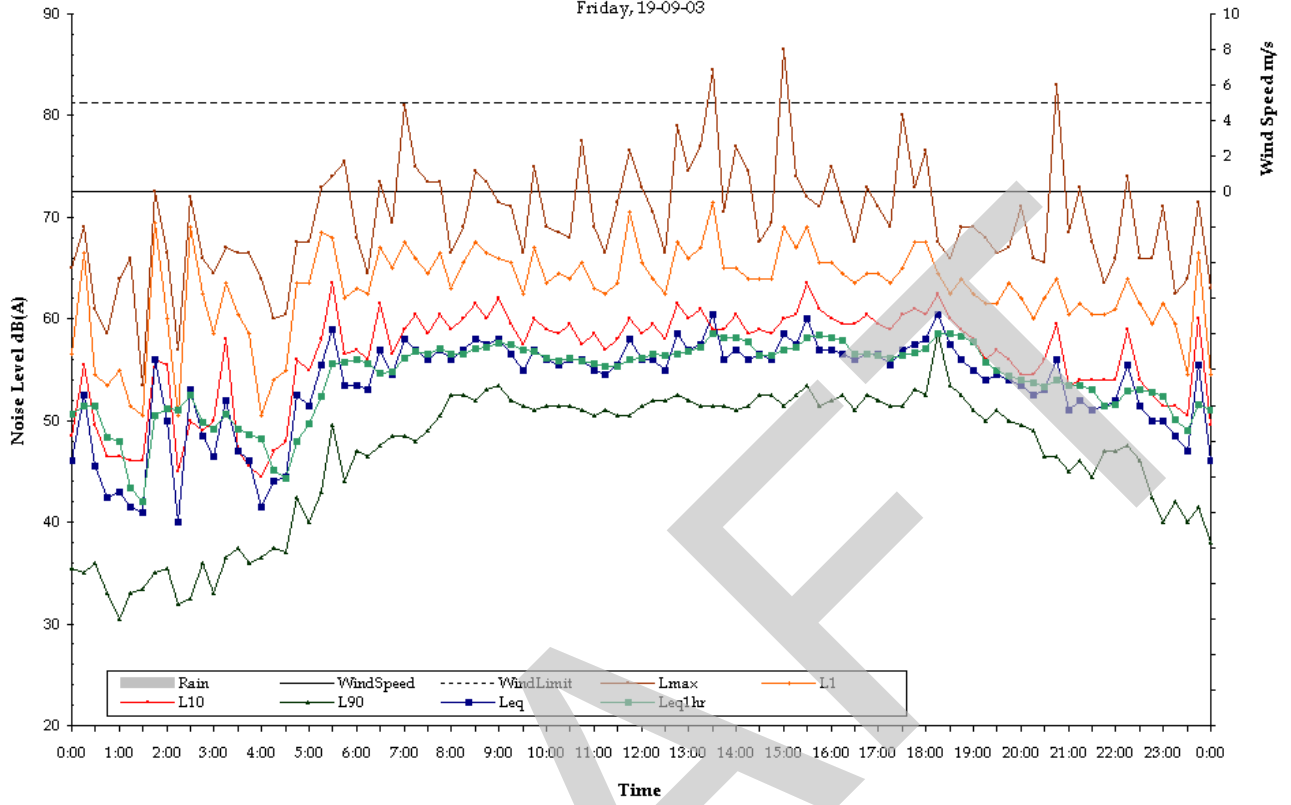
Measured Ambient Noise Levels  
Logging Location 7  
Wednesday, 17-09-03



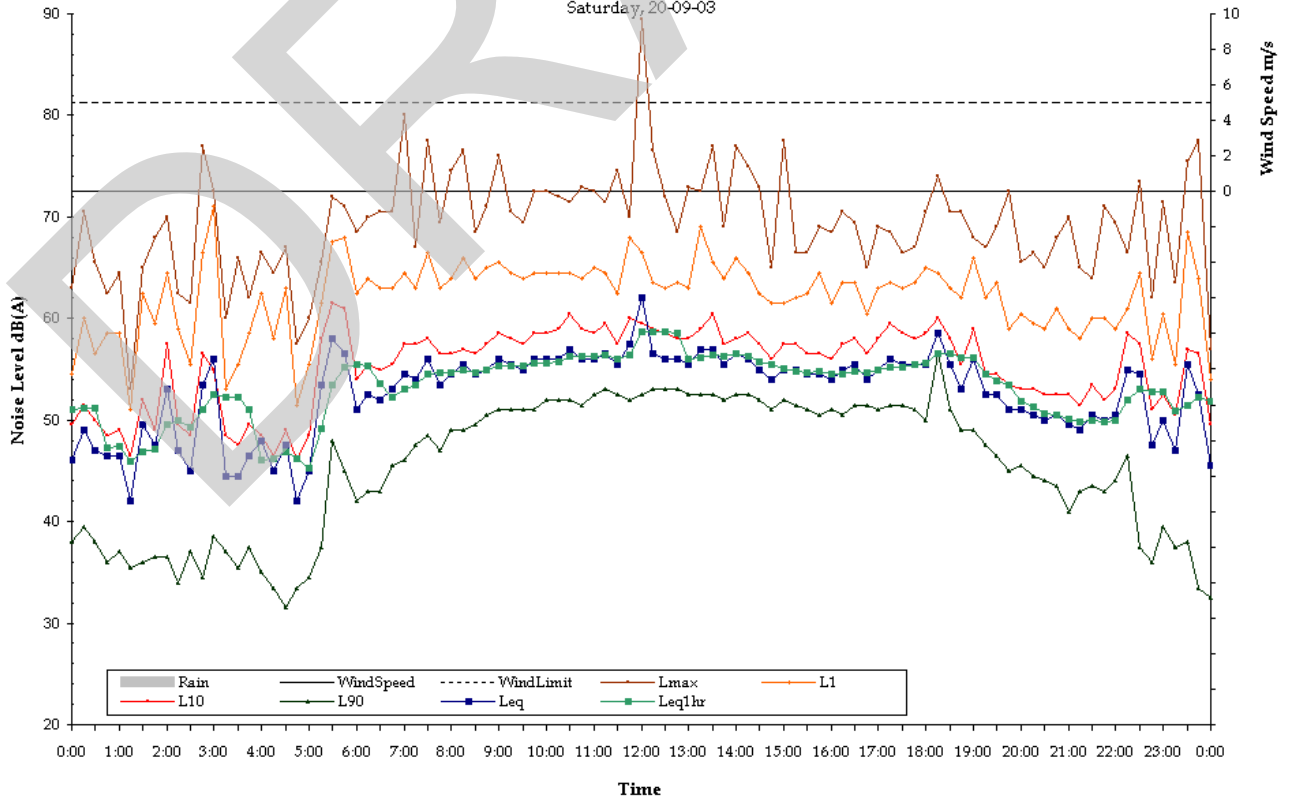
Measured Ambient Noise Levels  
Logging Location 7  
Thursday, 18-09-03

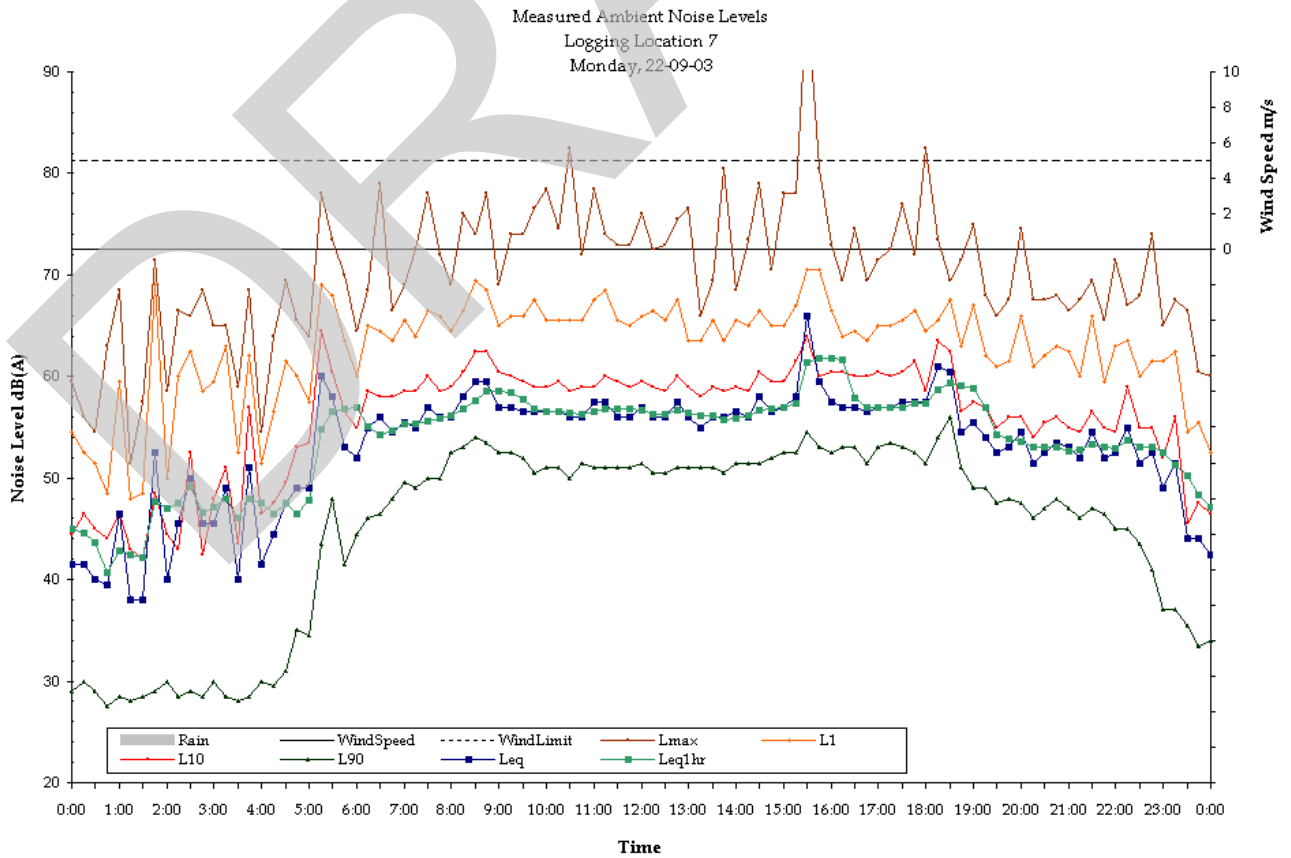
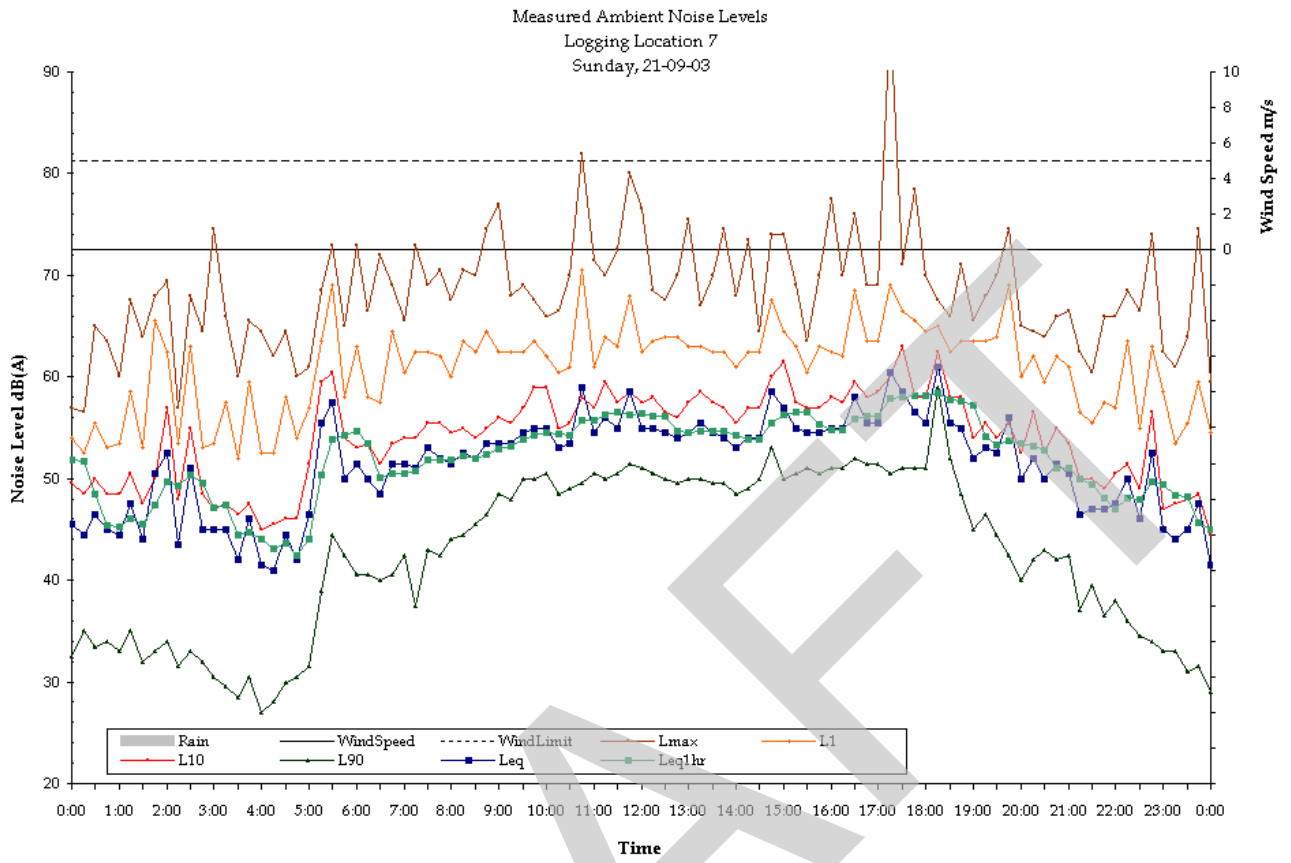


Measured Ambient Noise Levels  
Logging Location 7  
Friday, 19-09-03

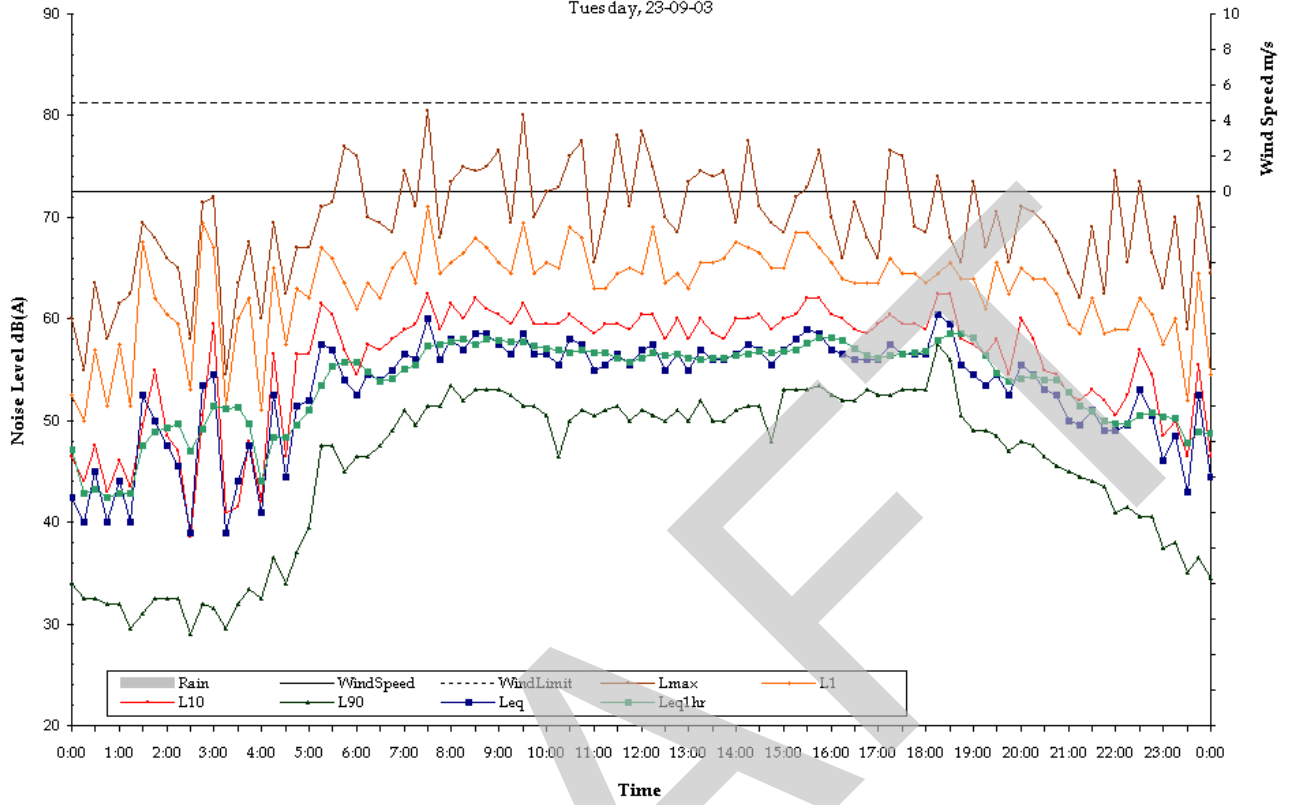


Measured Ambient Noise Levels  
Logging Location 7  
Saturday, 20-09-03

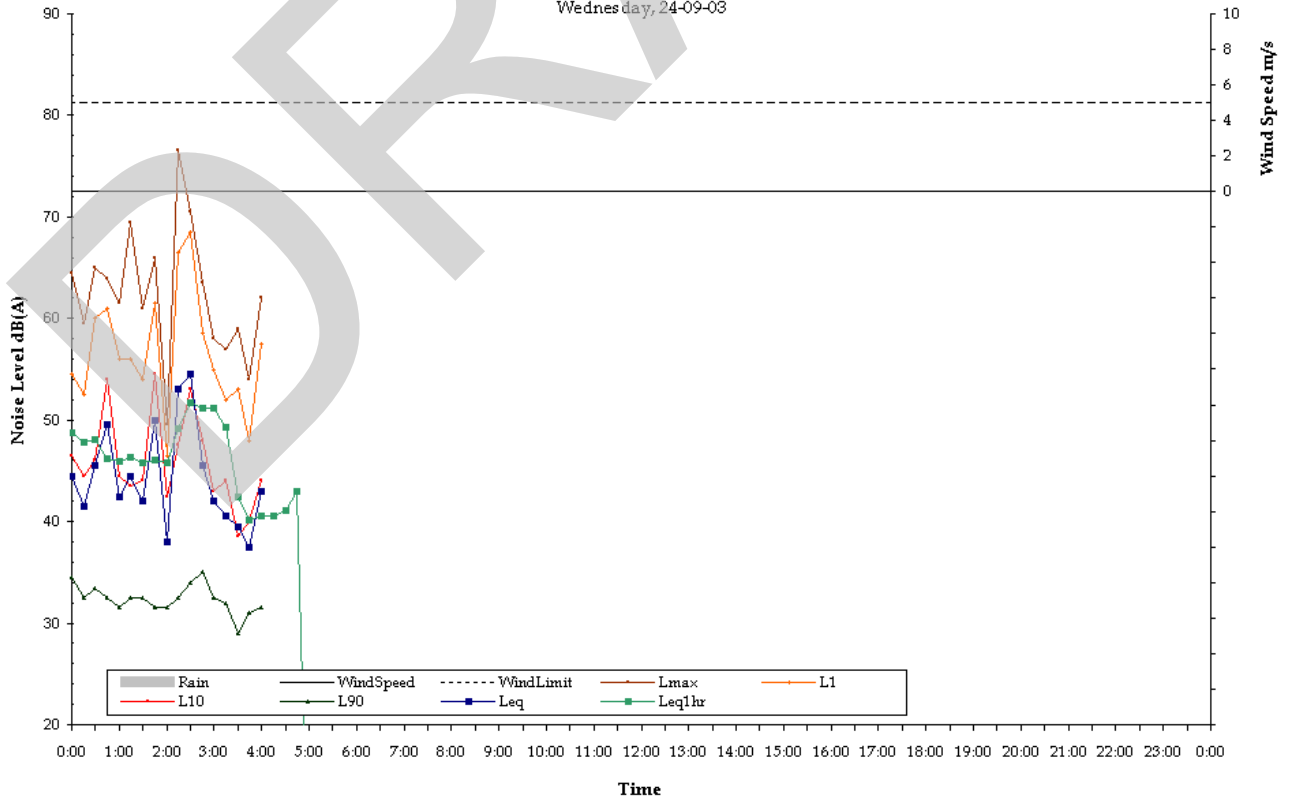


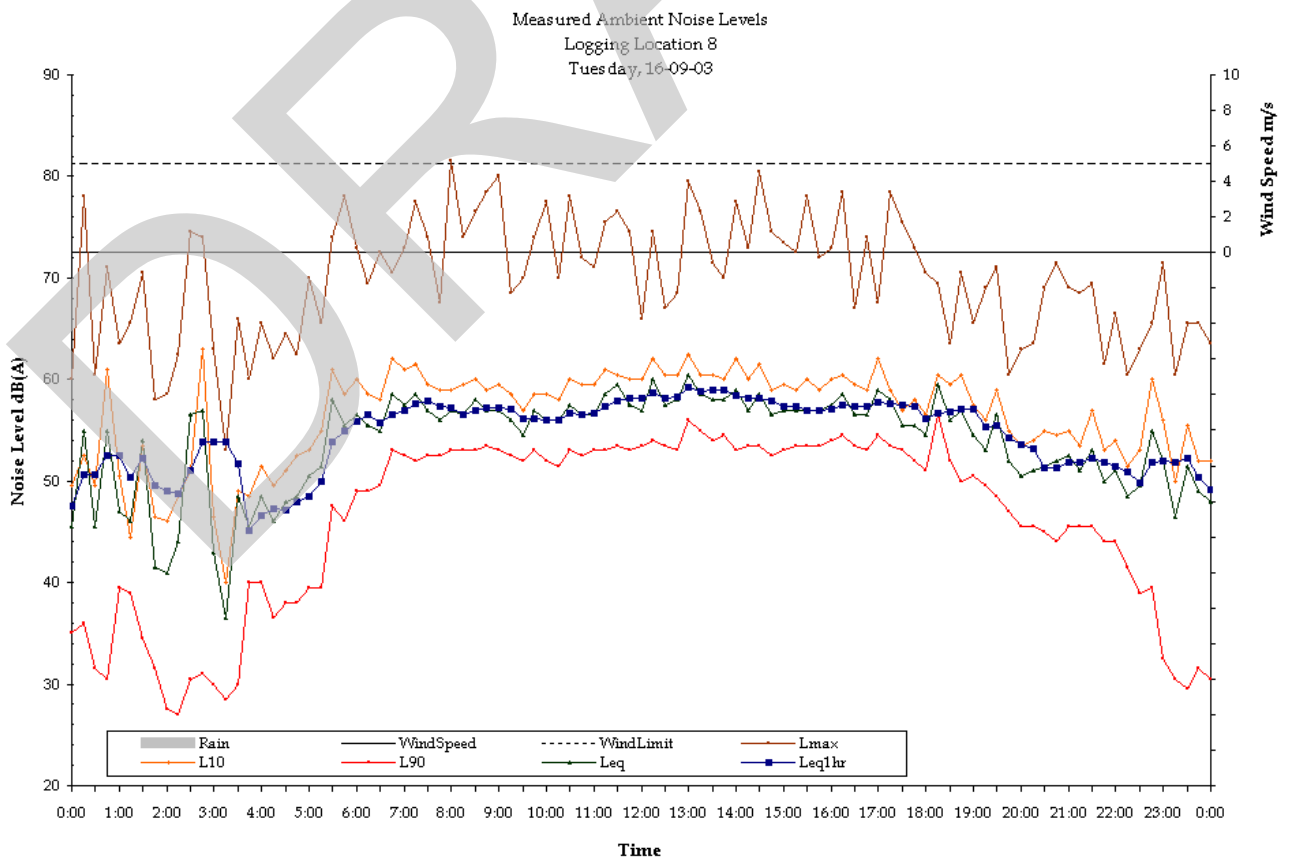
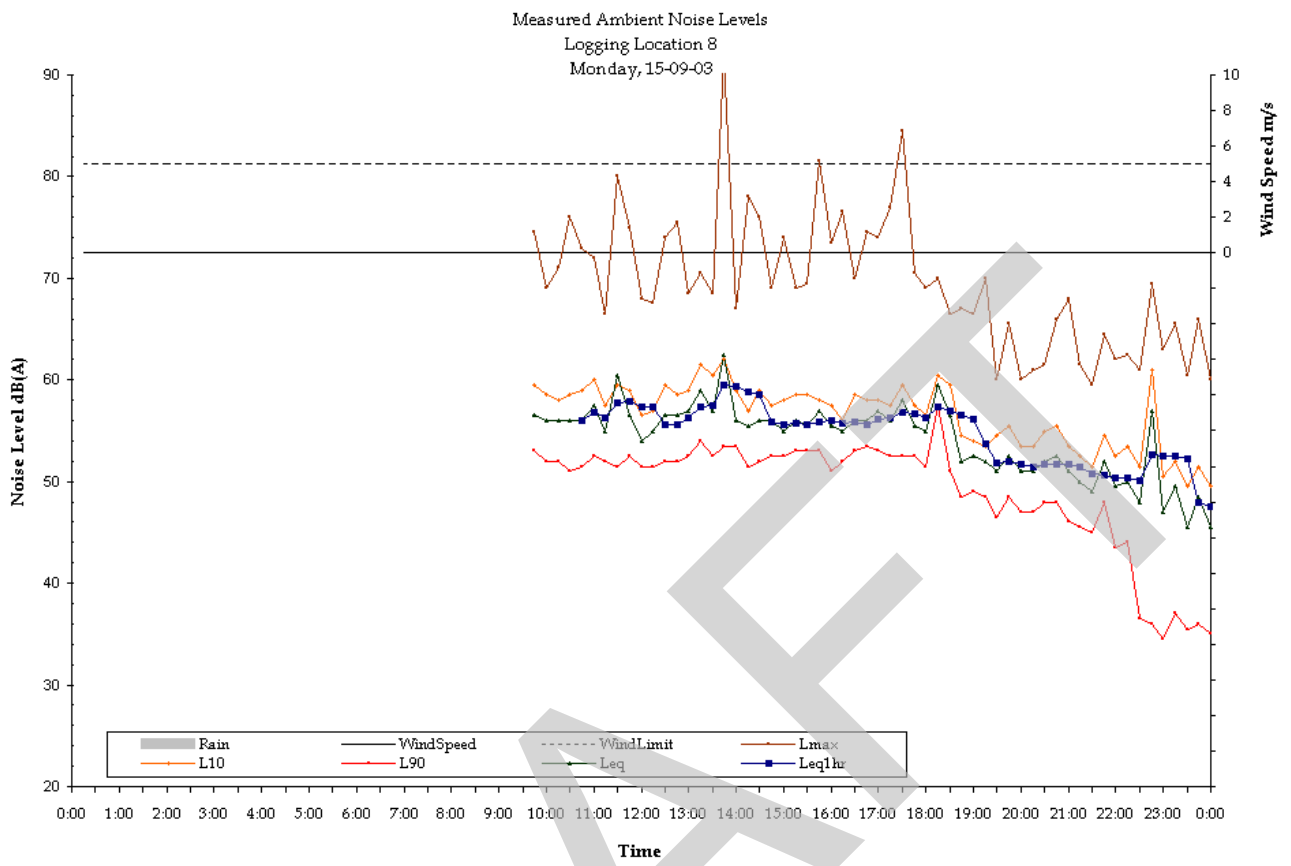


Measured Ambient Noise Levels  
Logging Location 7  
Tuesday, 23-09-03

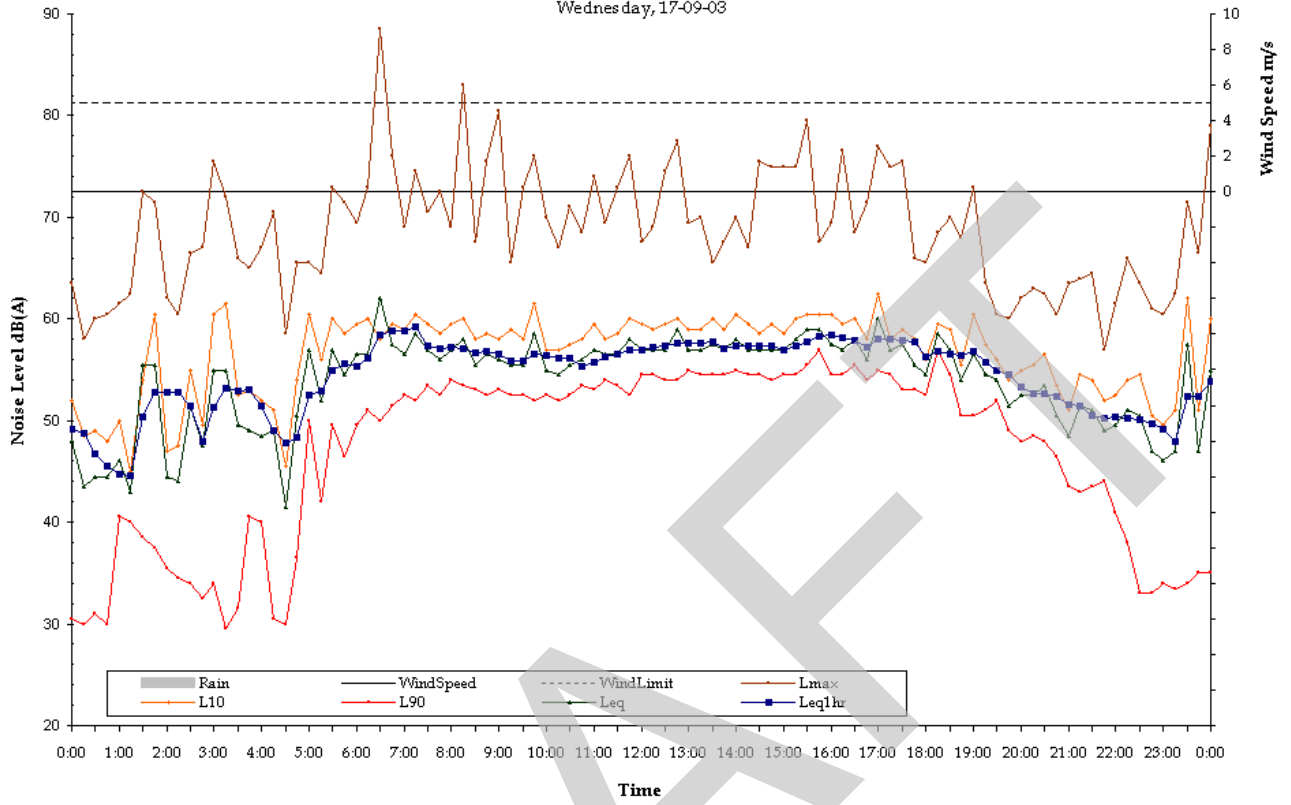


Measured Ambient Noise Levels  
Logging Location 7  
Wednesday, 24-09-03

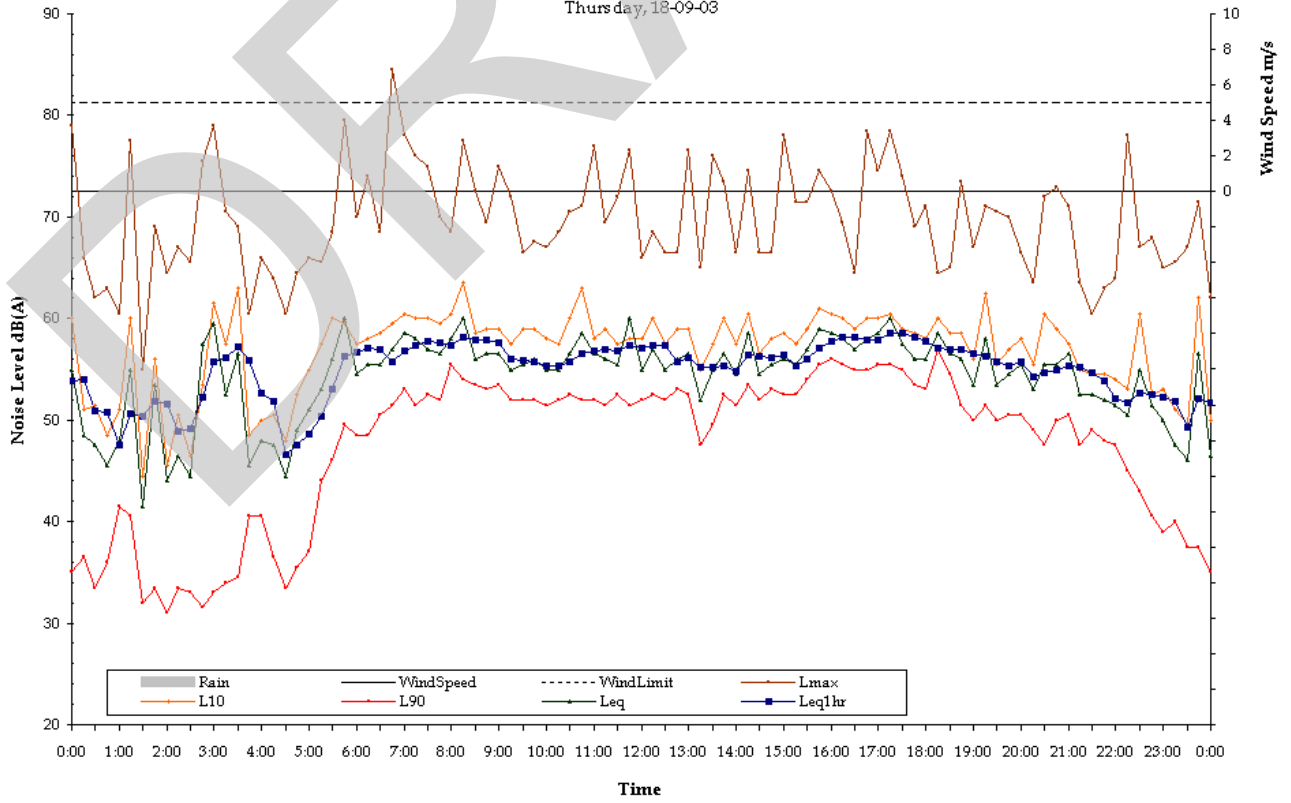




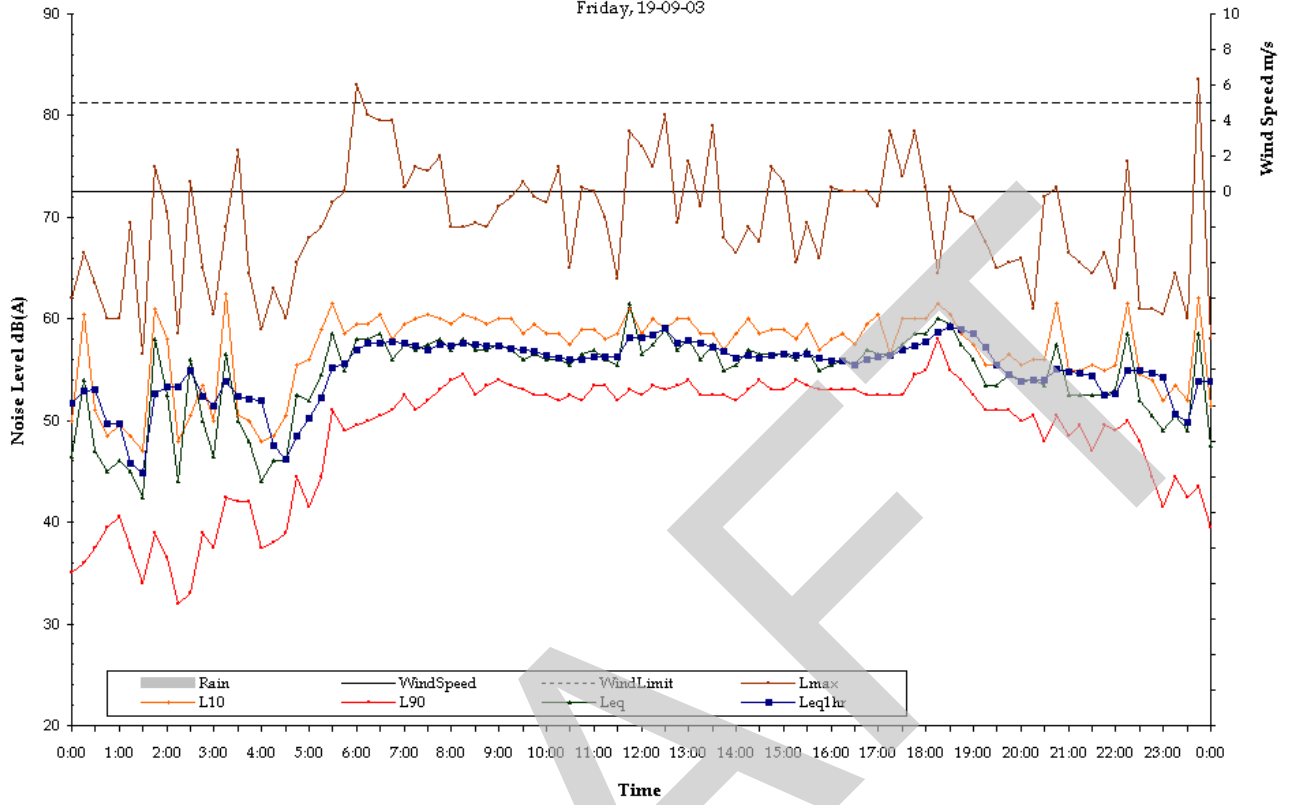
Measured Ambient Noise Levels  
Logging Location 8  
Wednesday, 17-09-03



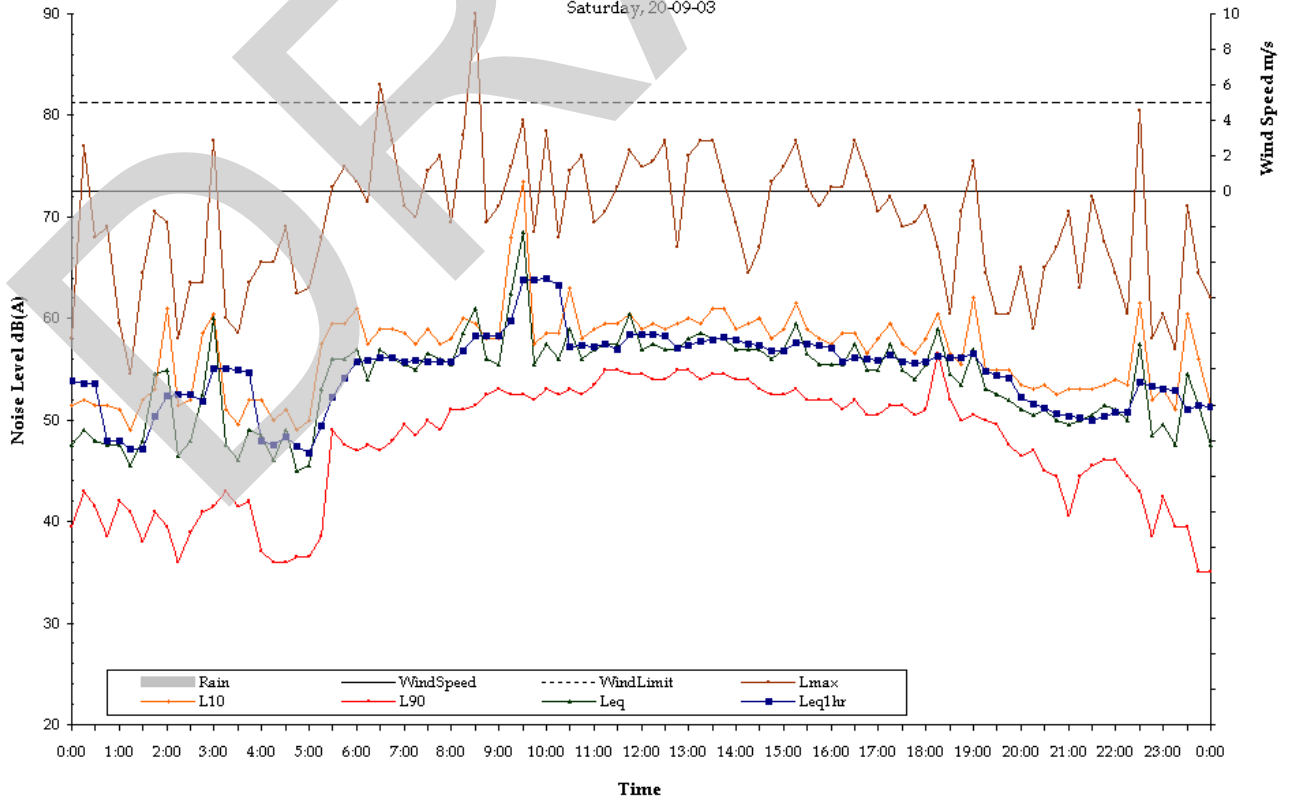
Measured Ambient Noise Levels  
Logging Location 8  
Thursday, 18-09-03

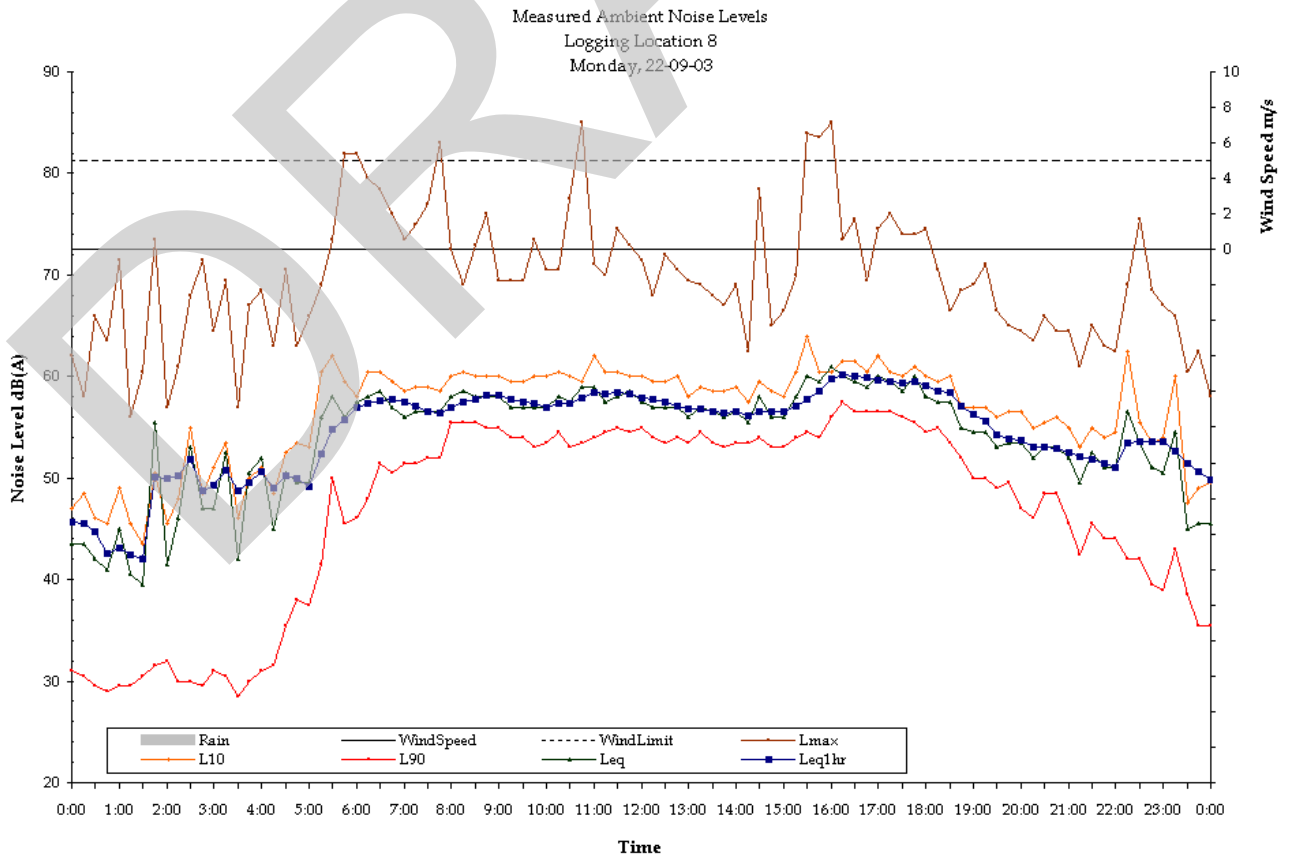
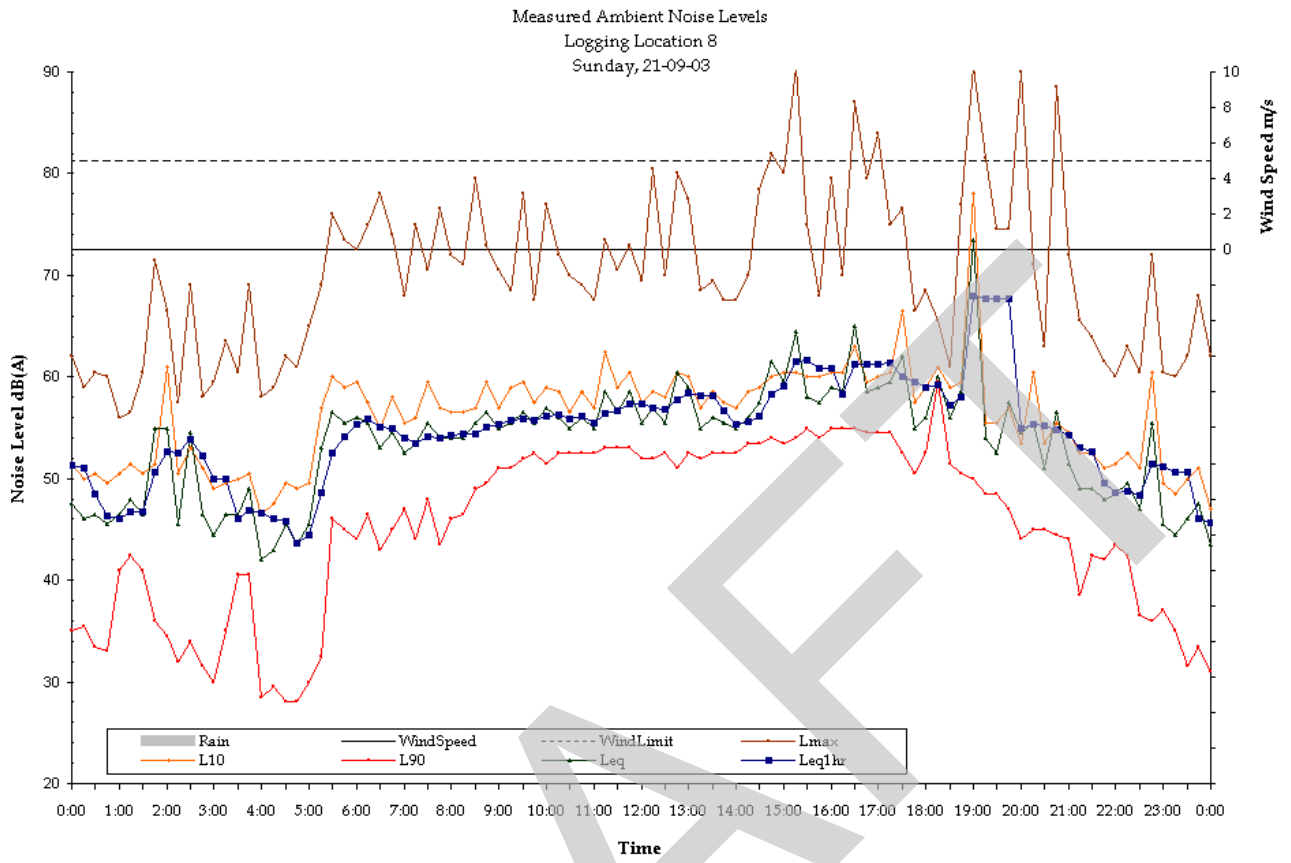


Measured Ambient Noise Levels  
Logging Location 8  
Friday, 19-09-03



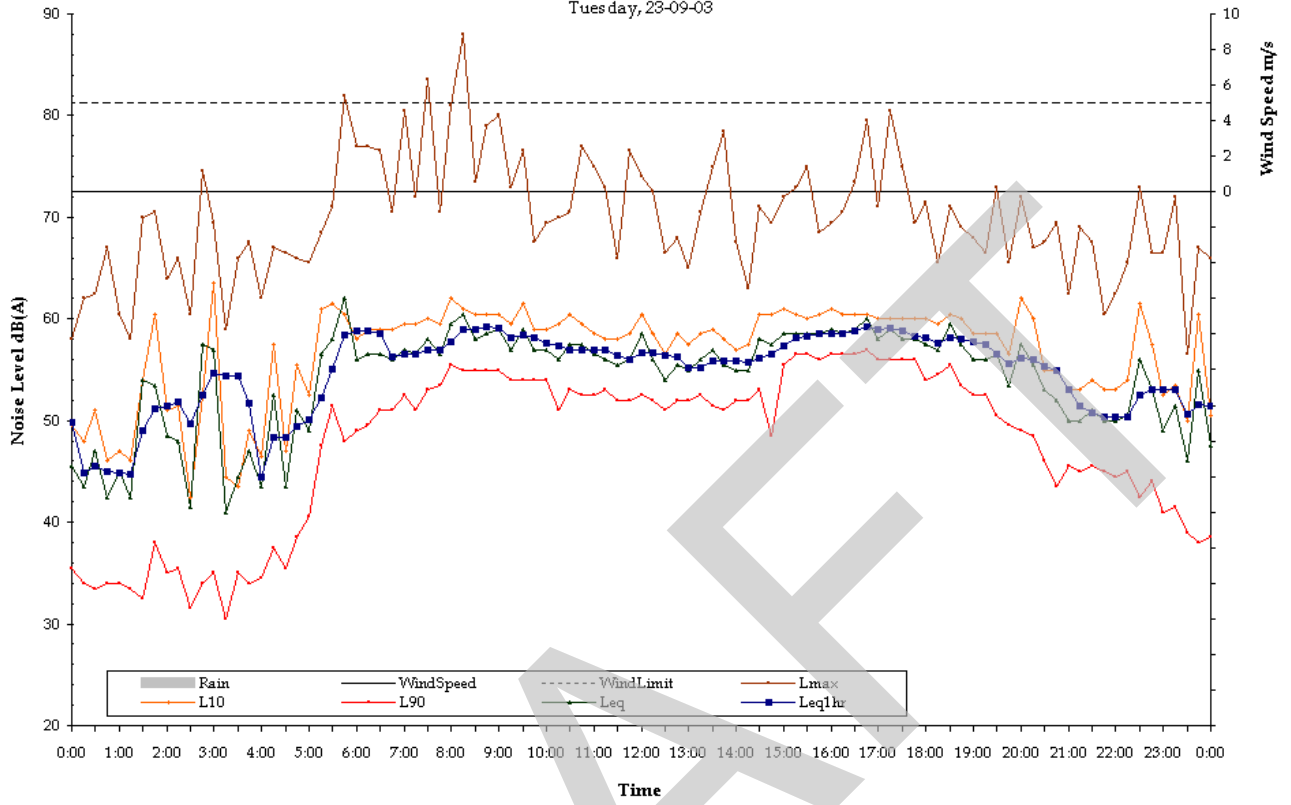
Measured Ambient Noise Levels  
Logging Location 8  
Saturday, 20-09-03



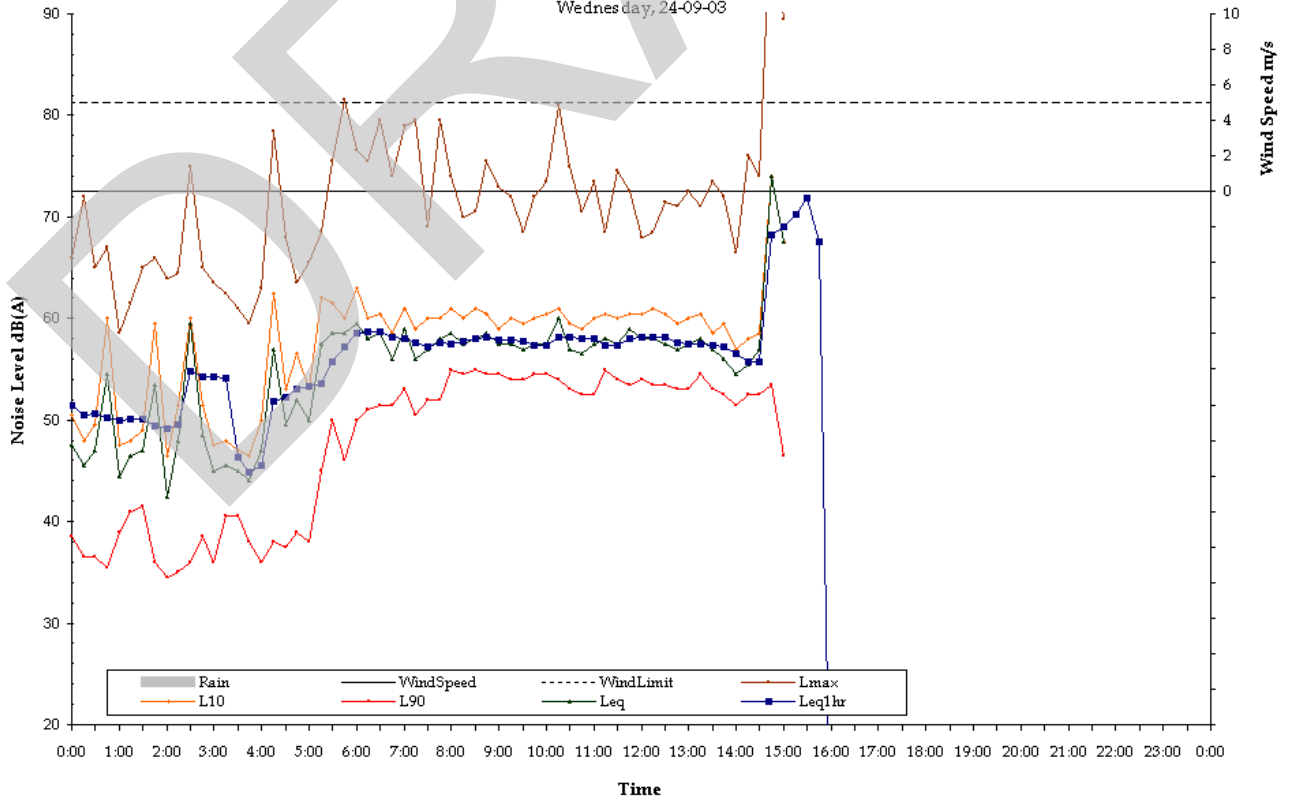




Measured Ambient Noise Levels  
Logging Location 8  
Tuesday, 23-09-03



Measured Ambient Noise Levels  
Logging Location 8  
Wednesday, 24-09-03



DRAFT

Annex G

Glossary of Acoustic  
Terminology

DRAFT

### ***ABBREVIATIONS:***

EPA - The Environmental Protection Authority of New South Wales

ENCM - The EPA's Environmental Noise Control Manual (1994)

INP - The EPA's Industrial Noise Policy (2000)

ECRTN - The EPA's Environmental Criteria for Road Traffic Noise Policy (1999)

CoRTN - The Calculation of Road Traffic Noise algorithm

### ***THE DECIBEL SCALE (UNITS OF NOISE):***

dB or decibel - Unit of relative noise level. Audible sound pressure varies across a range of  $10^7$ Pa from the threshold of hearing ( $20\mu\text{Pa}$ ) to the threshold of pain (200Pa). In order to express noise with more manageable numbers, a logarithmic scale called Decibels is commonly used.

dB(A) - The decibel scale can have a number of weighting filters applied to it, the most common being the A-weighting filter. The purpose of the filter is to apply weighting adjustments over the frequency range of human hearing so that measured levels better match perceived levels. The (A) denotes the use of this filter.

dB(LinPeak) - Units indicating the peak sound pressure level (not RMS) expressed as decibels with no frequency weighting.

The following points give an indication of what the noise levels and differences represent in terms of perception, to an average person:

- 0 dB represents the threshold of human hearing (for a young person with ears in good condition).
- 140 dB represents the threshold of pain.
- noise level differences of less than 2 dB are generally imperceptible;
- differences of around 5 dB are usually significant; and
- an increase or decrease of around 10 dB appears to double or halve the loudness of a noise.

### ***ENVIRONMENTAL NOISE DESCRIPTORS***

Noise from environmental sources such as vehicles often varies with time. For this reason, noise emission from such sources is often described in terms of

statistical noise descriptors. The following descriptors are commonly used to assess noise exposure:

SPL or  $L_{AF}$  - The level of sound pressure as determined by a sound level meter complying with AS1259. The frequency-weighting is specified (A) and the time-weighting is assumed to be Fast (F) if not specified.

$L_{10}$ , the noise level that is exceeded for 10 per cent of the time and is approximately the average of the maximum noise levels;

$L_{90}$ , the noise level exceeded for 90 per cent of the time and is approximately the average of the minimum noise levels. The  $L_{90}$  level is often referred to as the "background" noise level and is commonly used as a basis for determining noise criteria for assessment purposes;

$L_{eq}$  is the continuous sound pressure level that embodies the equivalent sound energy as the fluctuating source measured, over the same time period.  $L_{eq}$  noise levels are often quoted with the time averaging period specified, for example:  $L_{eq,1hr}$ .

$L_{max}$  - The absolute maximum noise level in a noise sample.

SEL - Sound Exposure Level. The constant sound pressure level that if maintained for one second, would deliver the same total sound energy as the original source. It is usually used to describe discrete noise events. It is similar in function to  $L_{eq}$  and can be used to calculate the  $L_{eq}$  arising from multiple occurrences of discrete events, over any time period.

$L_w$  or SWL - Sound Power Level - This is a measure of the total power radiated by a source. The Sound Power of a source is a fundamental property of the source and is independent of the surrounding environment.

Octave Band - Noise related effects including perception and attenuation with distance are dependent on the frequency of the noise (among other factors). Standard frequency bands have been mathematically defined to assist in analysis of the frequency content of sounds. Each band is commonly referred to by its centre frequency value. Since the centre frequency doubles from band to band, the bands are collectively referred to as Octave Bands. Sometimes a more refined analysis of frequency content is desired, and in those cases bands one-third the width of the standard Octave Bands are used - these are referred to as One-third Octave Bands.

ABL - The Assessment Background Level is the lowest tenth percentile value of the  $L_{90}$  levels measured for each day/evening/night assessment period of the monitoring cycle, and

RBL - The Rating Background Level is defined as the overall single value representative background noise level for each of the day, evening and night periods respectively. The RBL is calculated as the median value of the corresponding ABL's (eg. for each night period of the monitoring cycle).