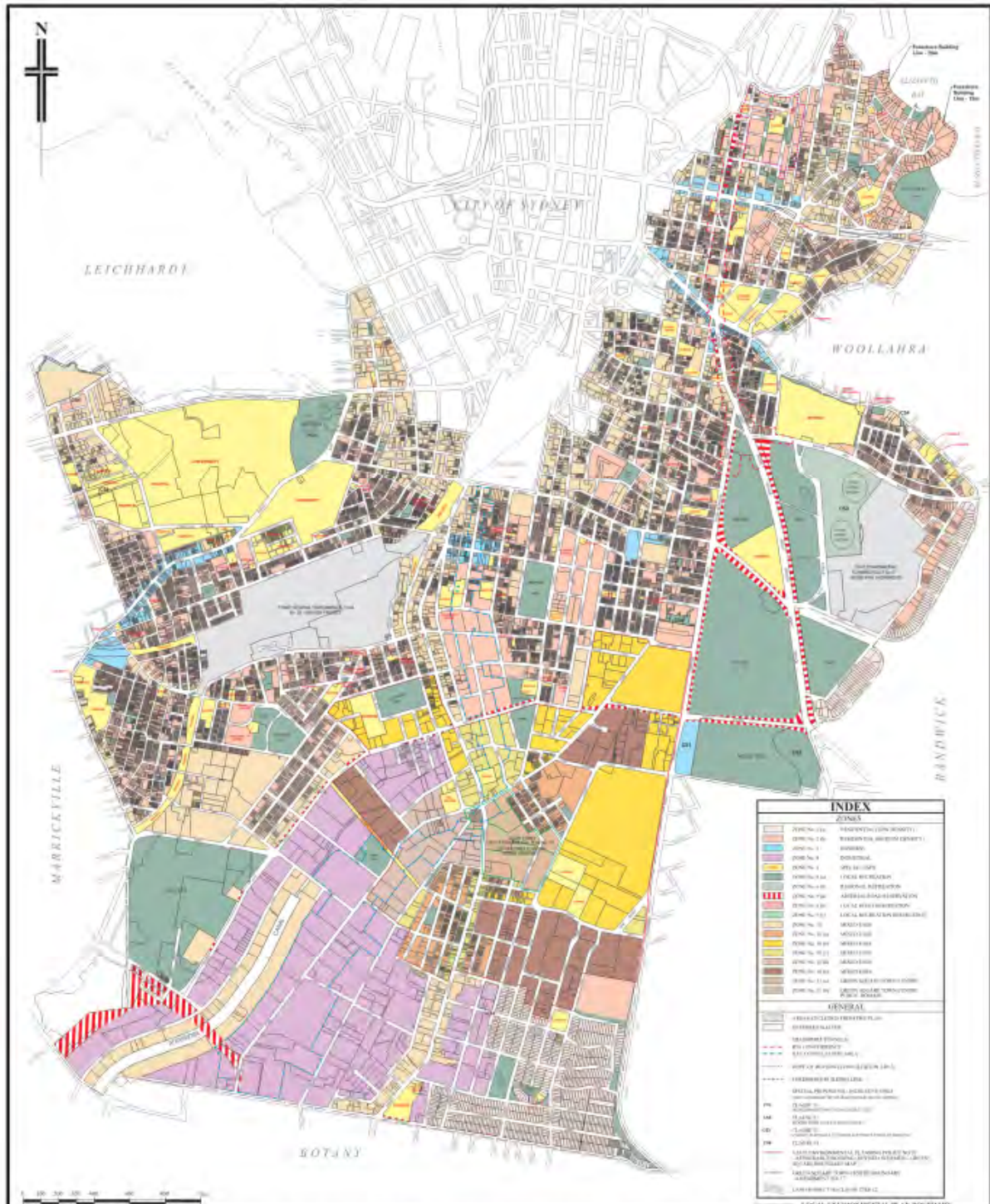


APPENDIX B

ZONING AND SITE MAPS



Figure B1: Site map showing proposed development and nearest noise sensitive receivers



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DRAWN BY	G.P.	DATE	Feb. 98
SUPERVISING DRAFTSPERSON	G. POLITIS		
PLANNING OFFICER	V. CONNELL/J. CIRILLO		
COUNCIL FILE No.	2001512		
CERTIFICATE PLAN No.	01/96		
NOTE: THIS IS AN AMENDED VERSION OF THE ORIGINAL MAP GAZETTED ON 24/6/1998			

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

SOUTH SYDNEY
LOCAL ENVIRONMENTAL PLAN 1998
(AS AMENDED)
ZONING

STATEMENT OF RELATIONSHIP WITH OTHER PLANS

1. This Plan is made pursuant to the Environmental Planning and Assessment Act 1979 (the Act) and the Environmental Planning and Assessment Regulations 1994 (the Regulations).

2. The Plan is made pursuant to the Act and the Regulations and is subject to the provisions of the Act and the Regulations.

3. The Plan is made pursuant to the Act and the Regulations and is subject to the provisions of the Act and the Regulations.

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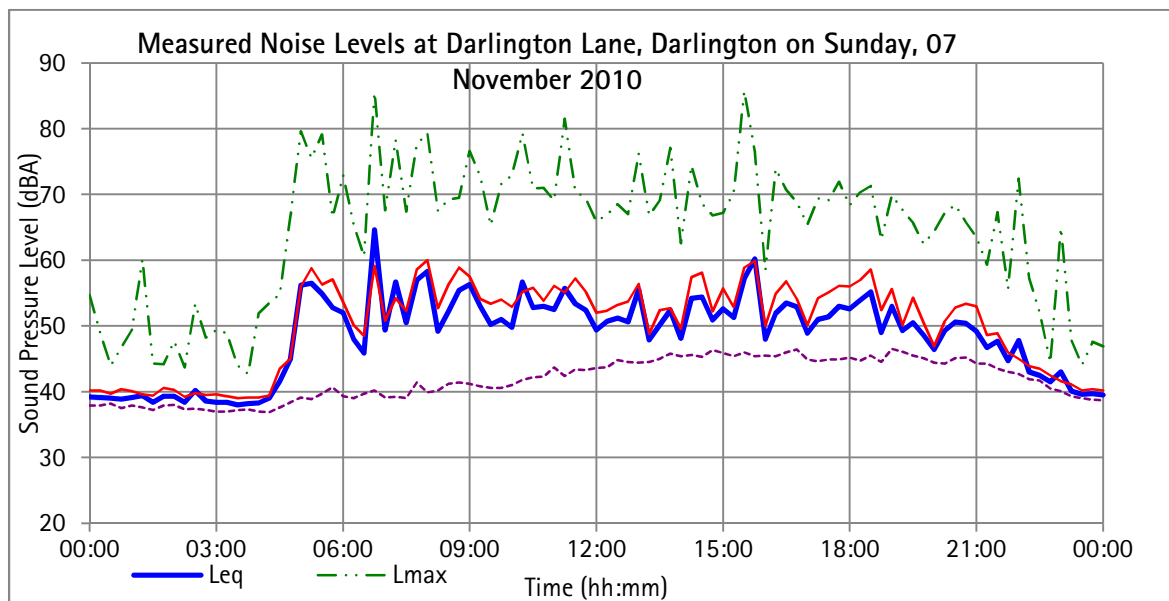
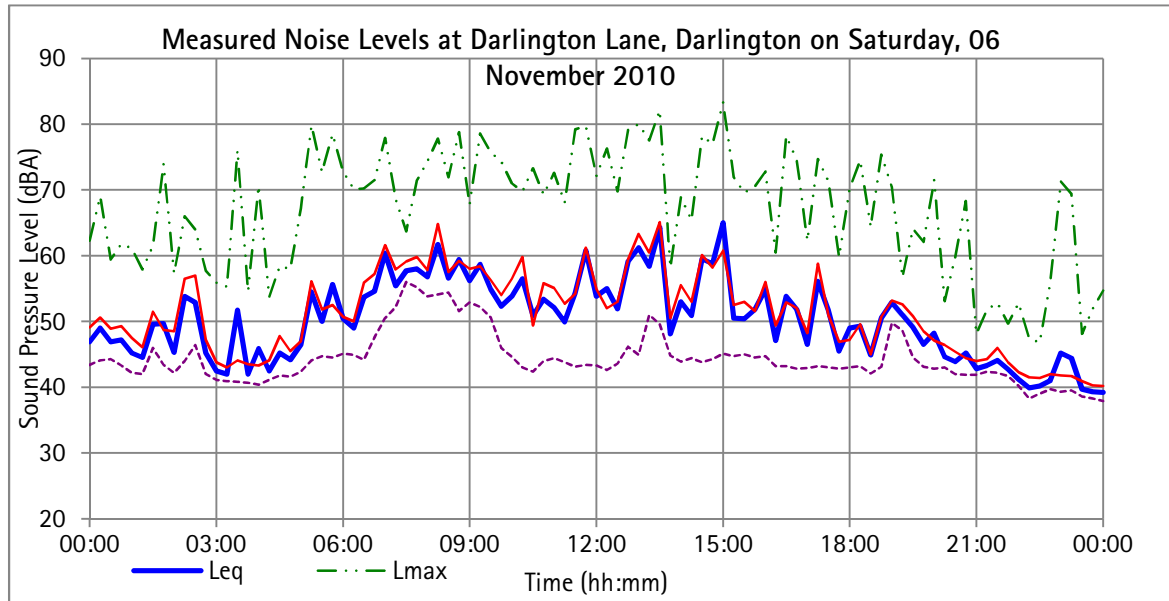
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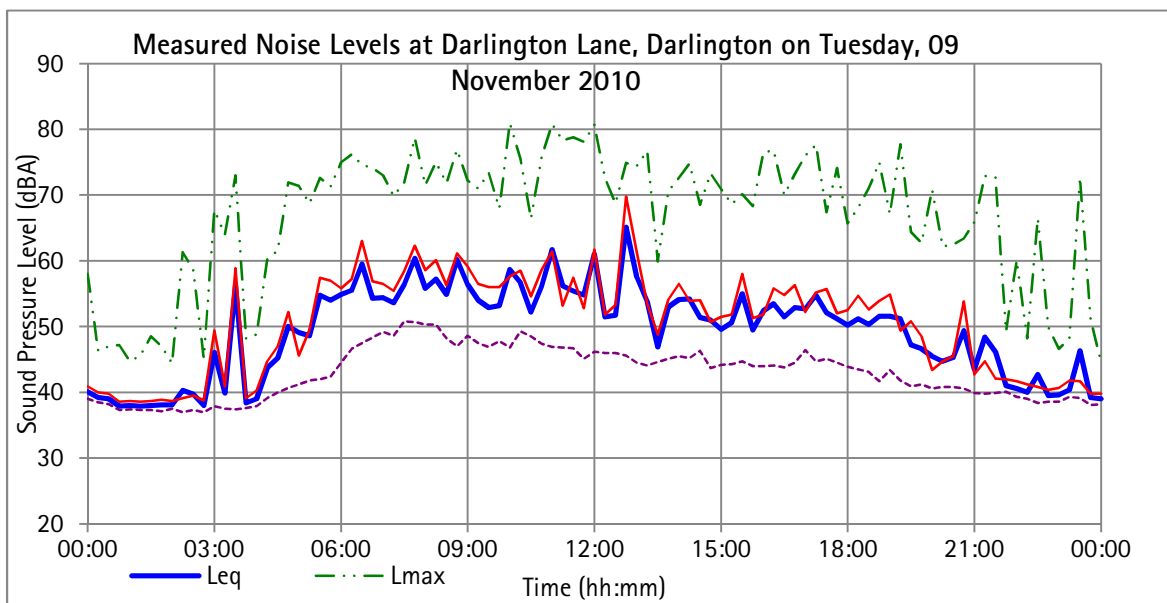
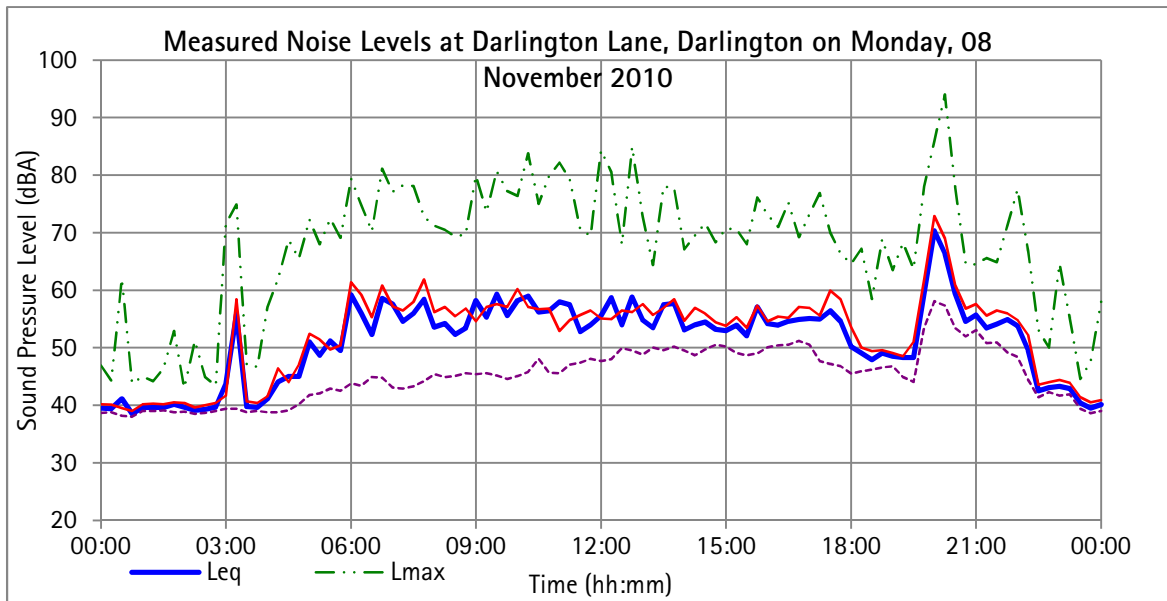
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GENERAL MANAGER

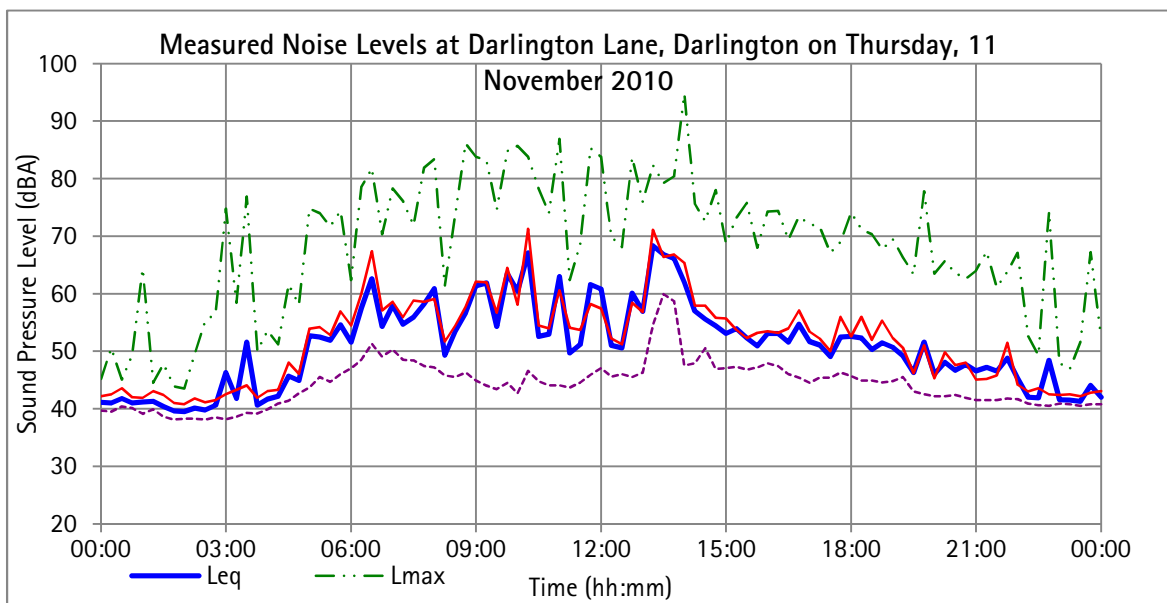
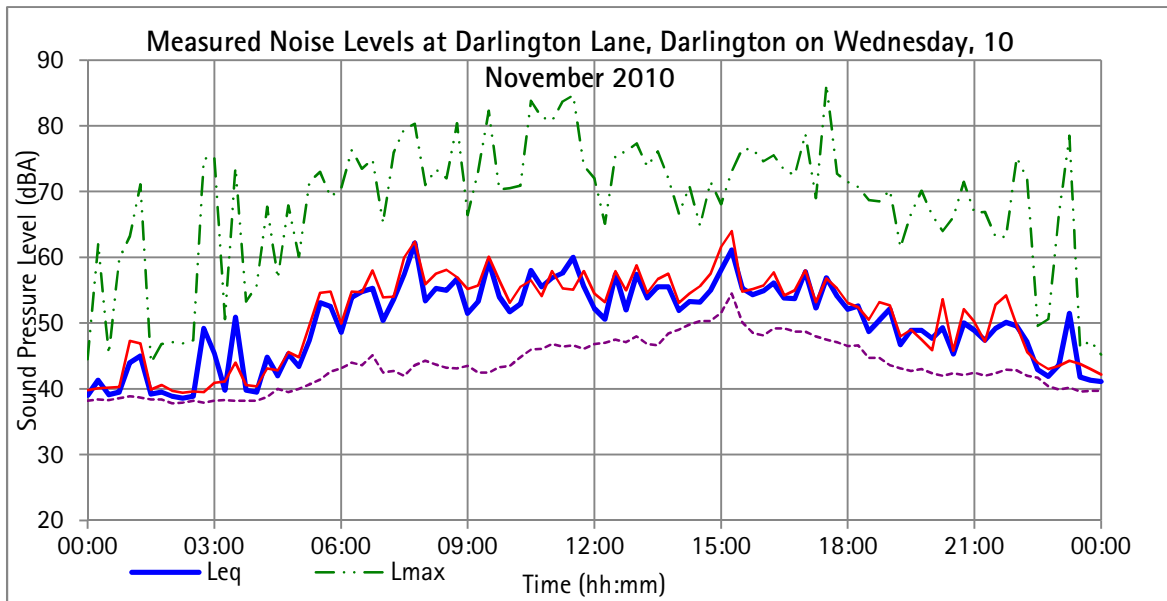
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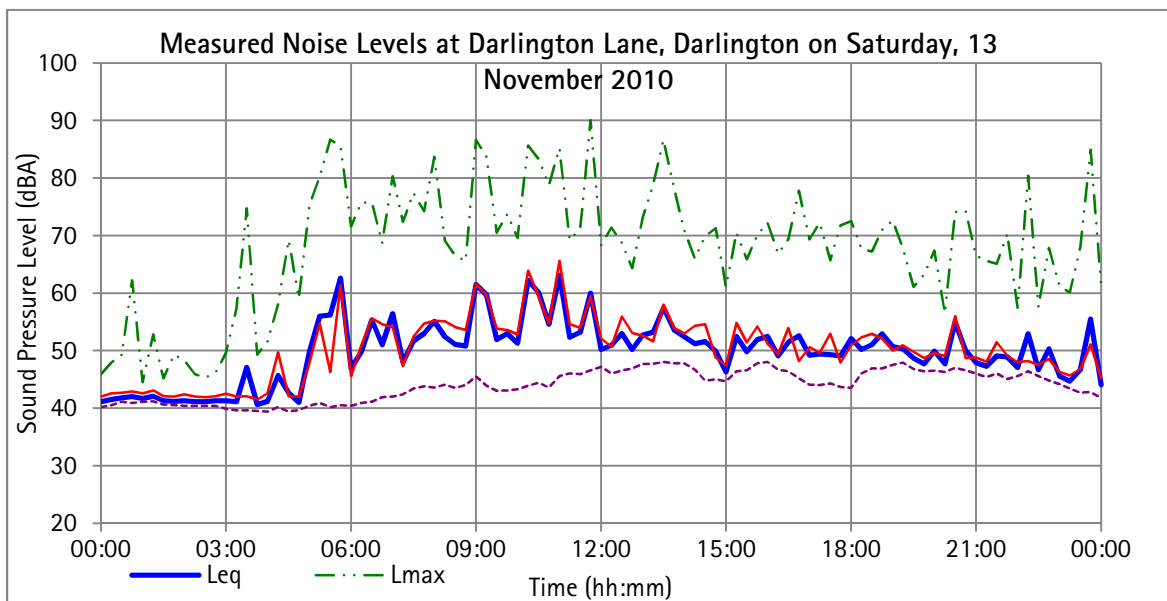
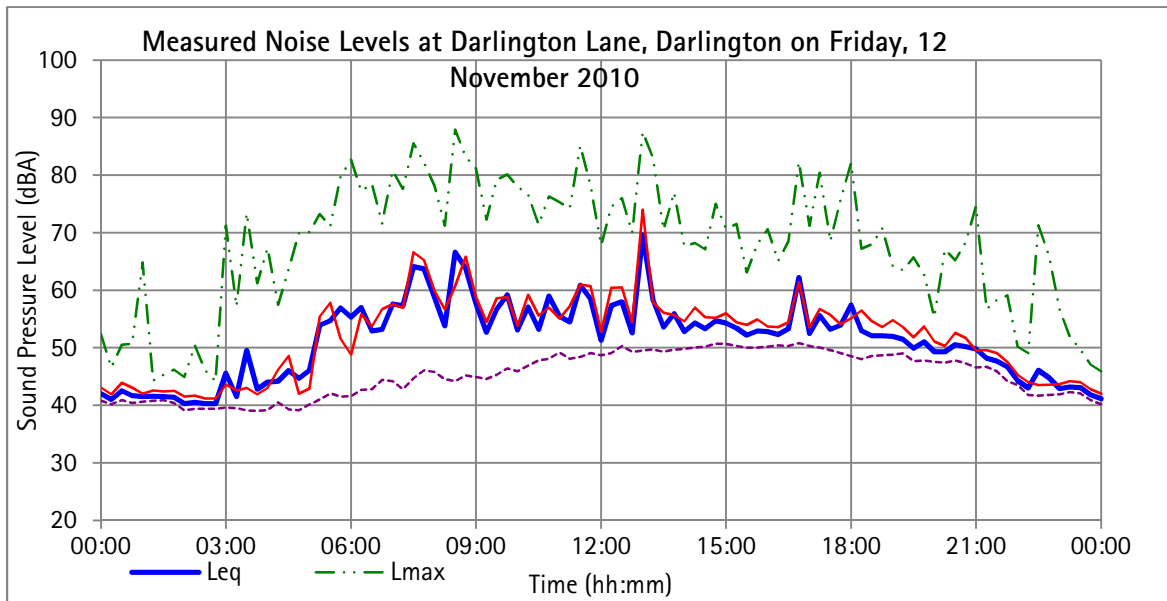
APPENDIX C

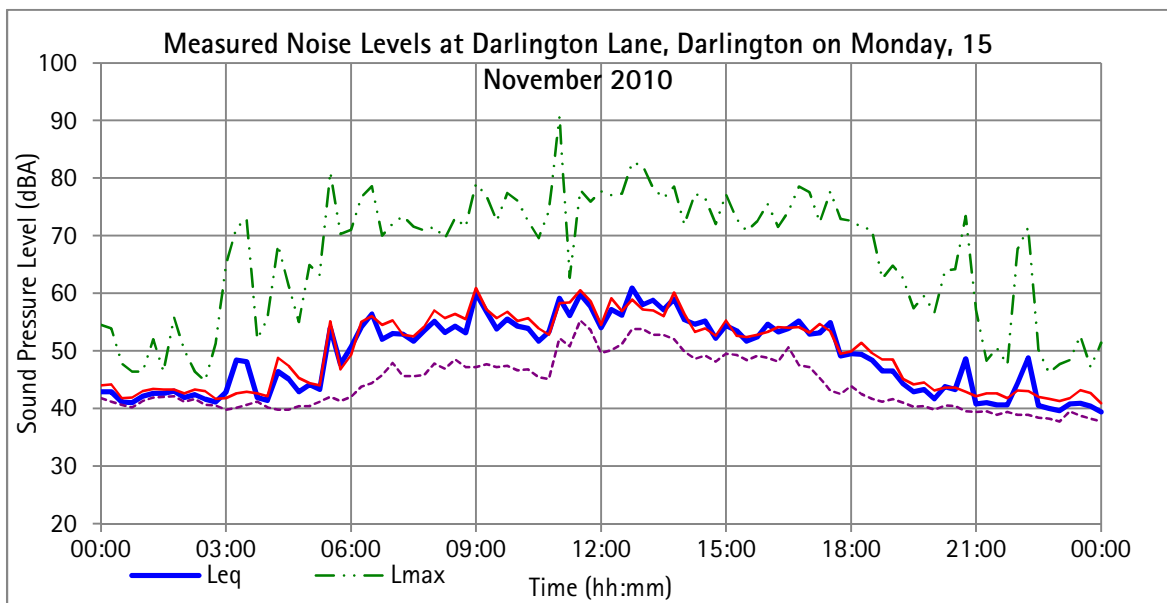
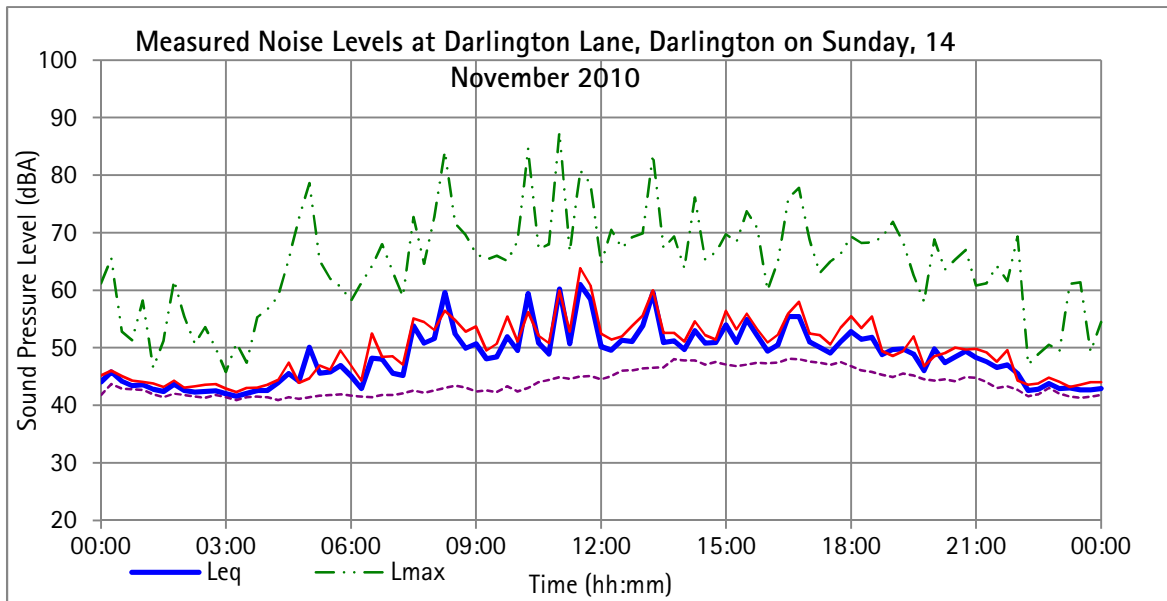
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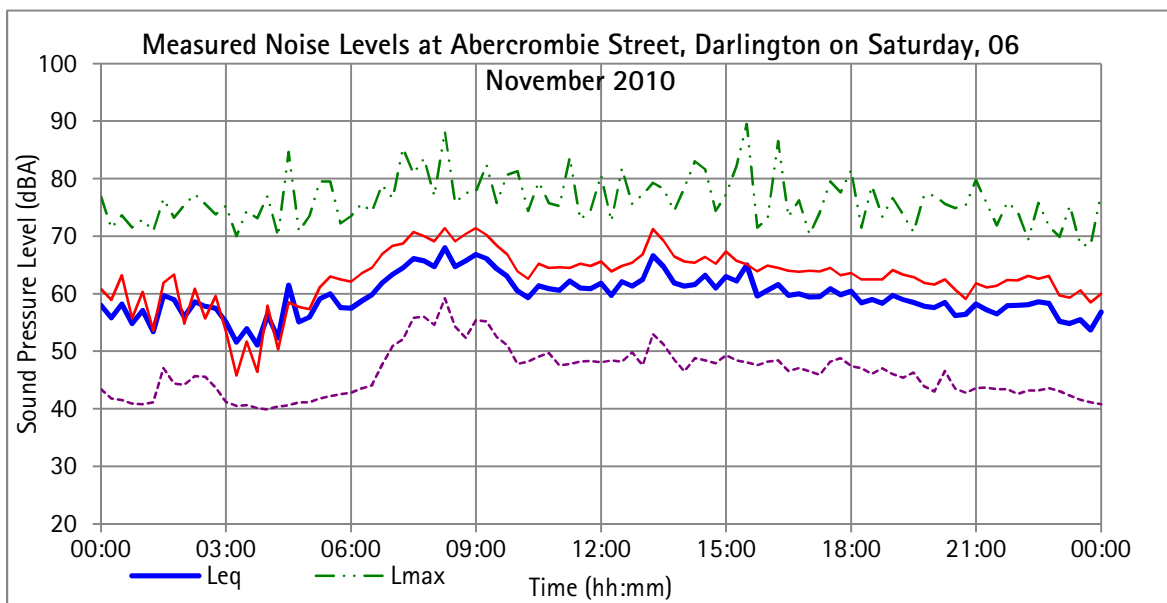
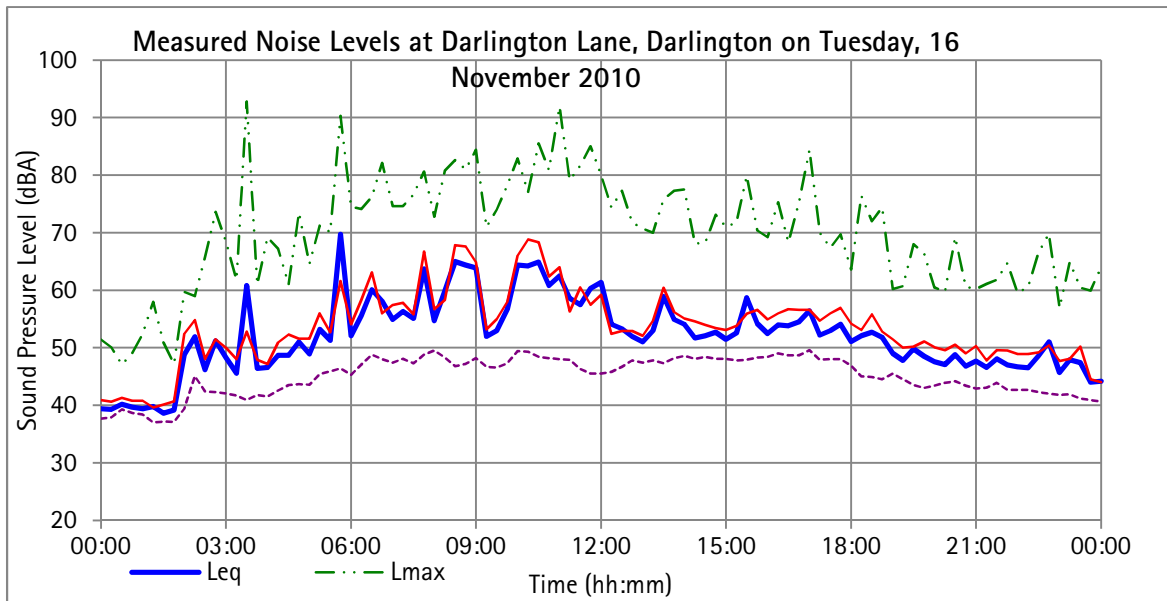


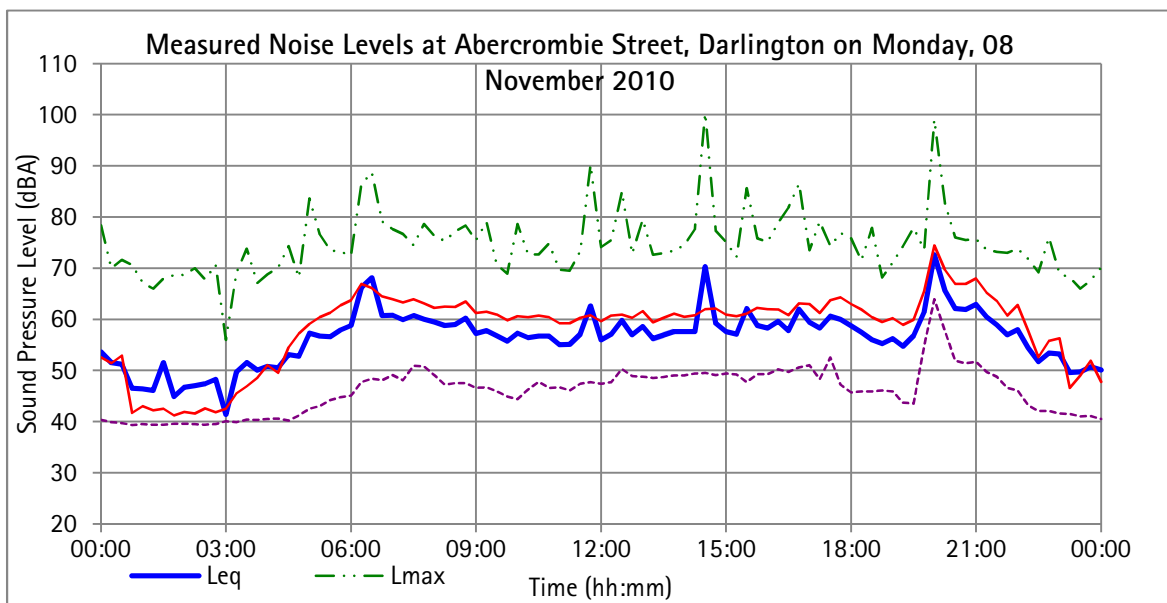
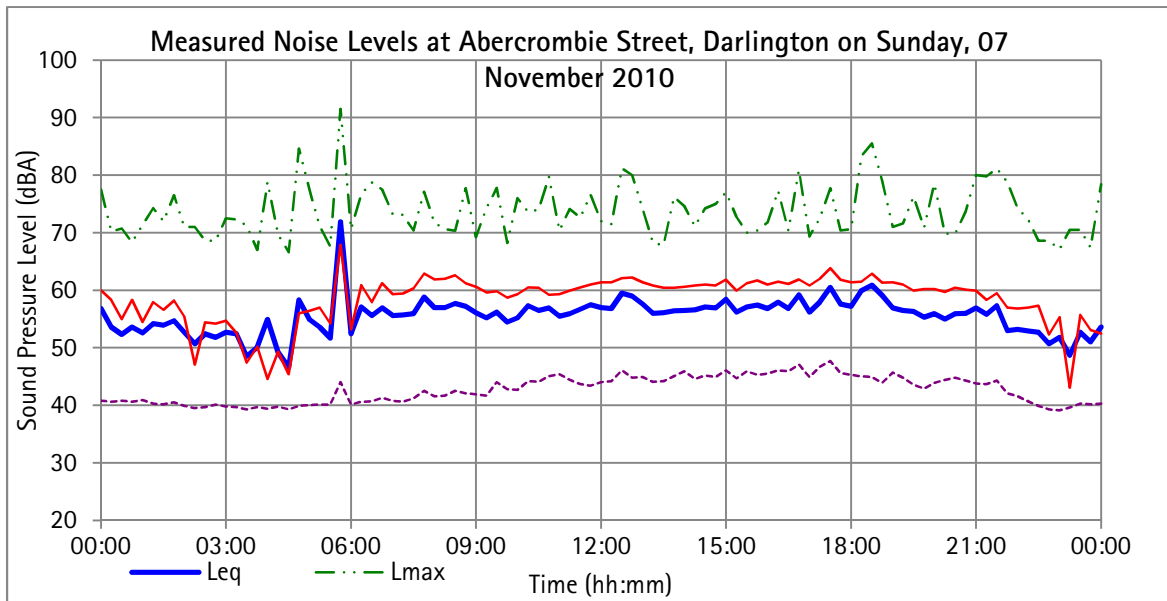


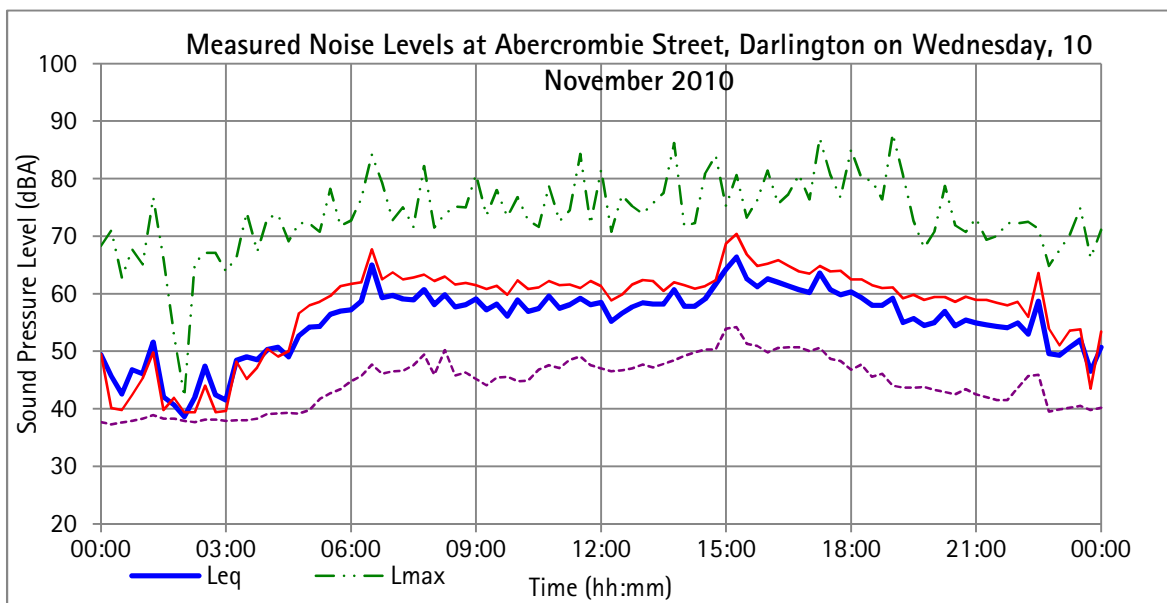
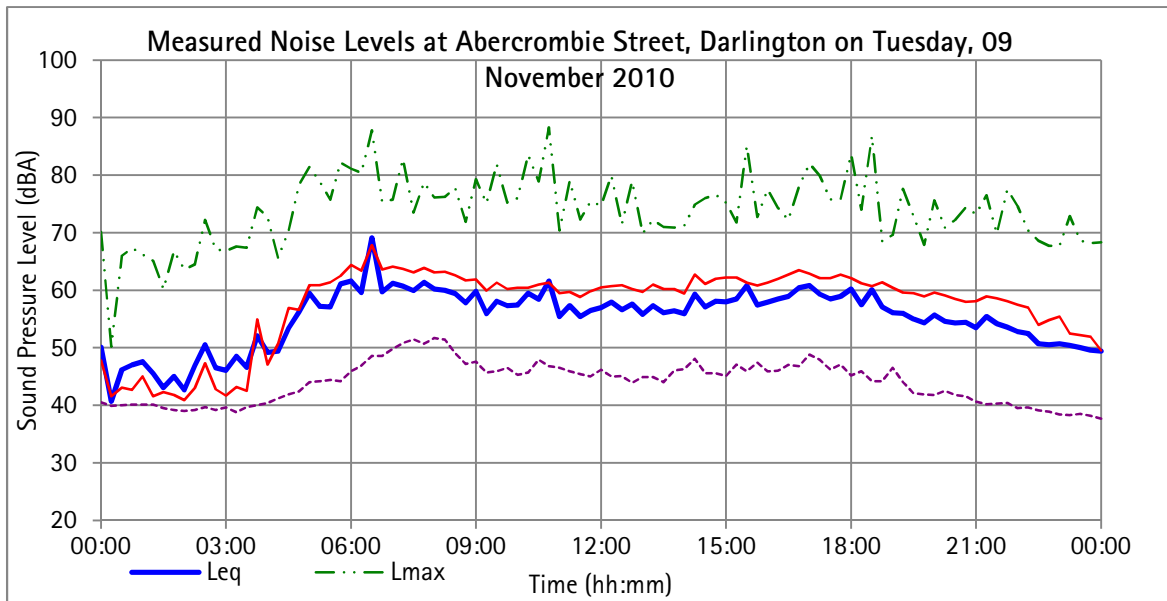


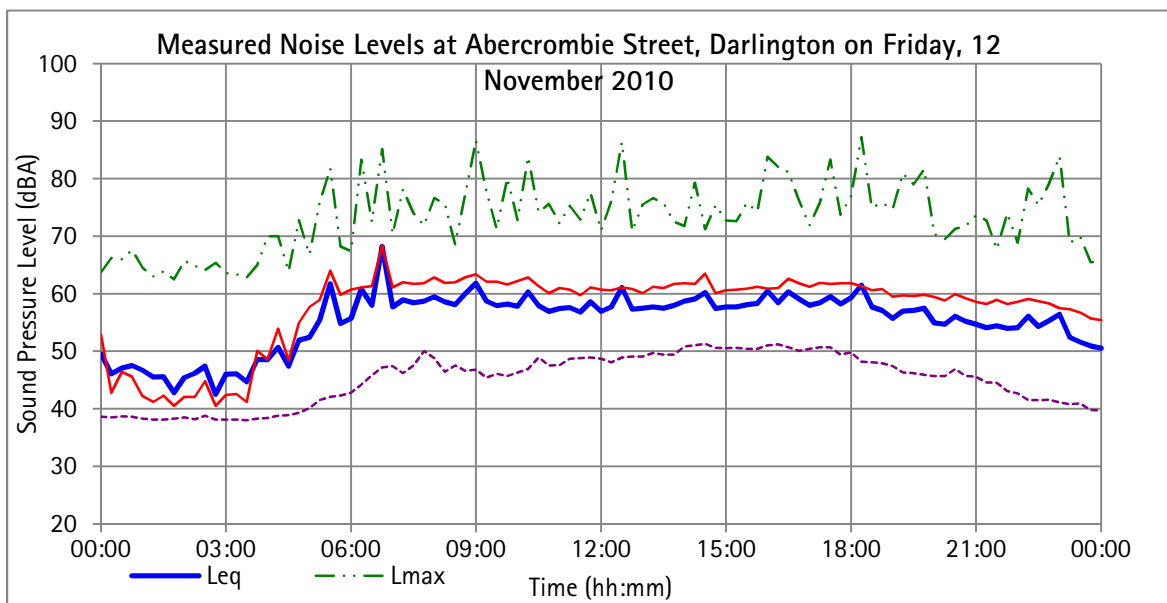
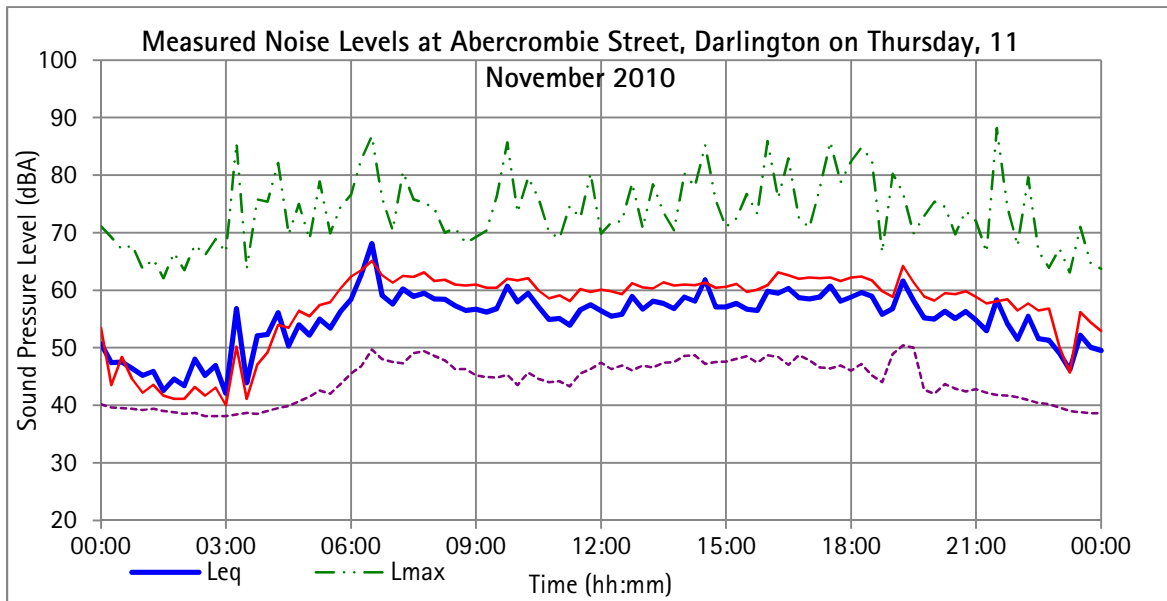


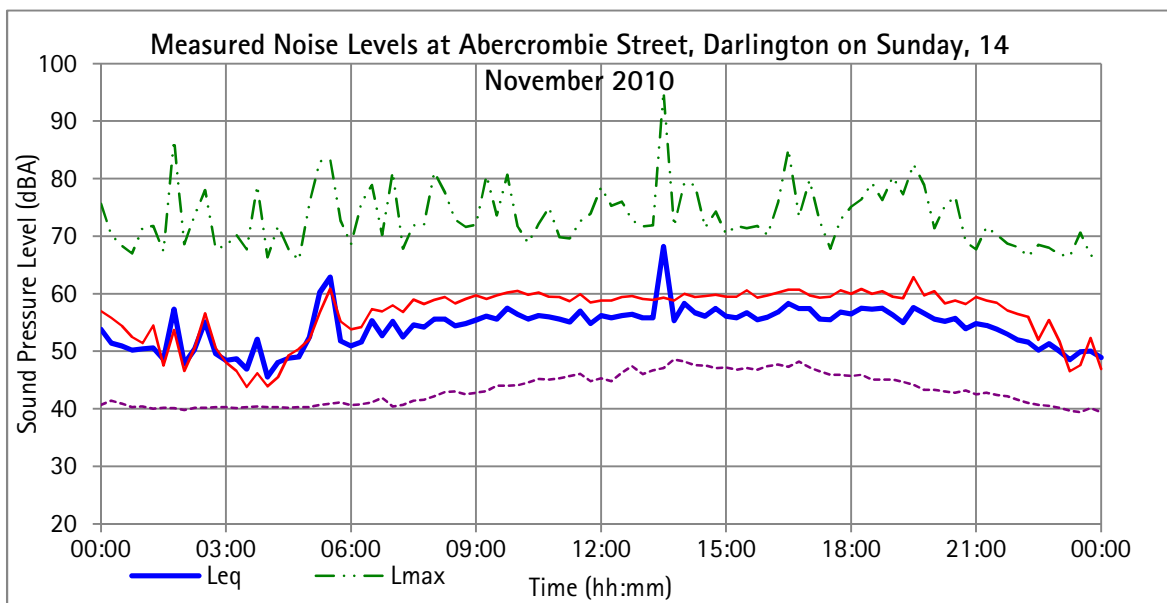
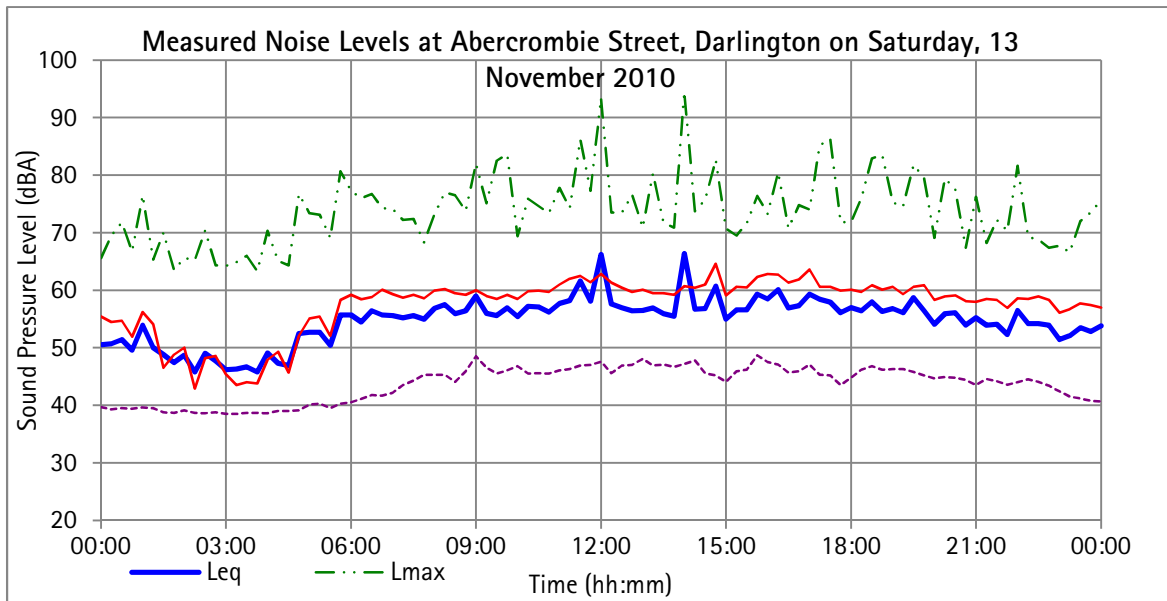


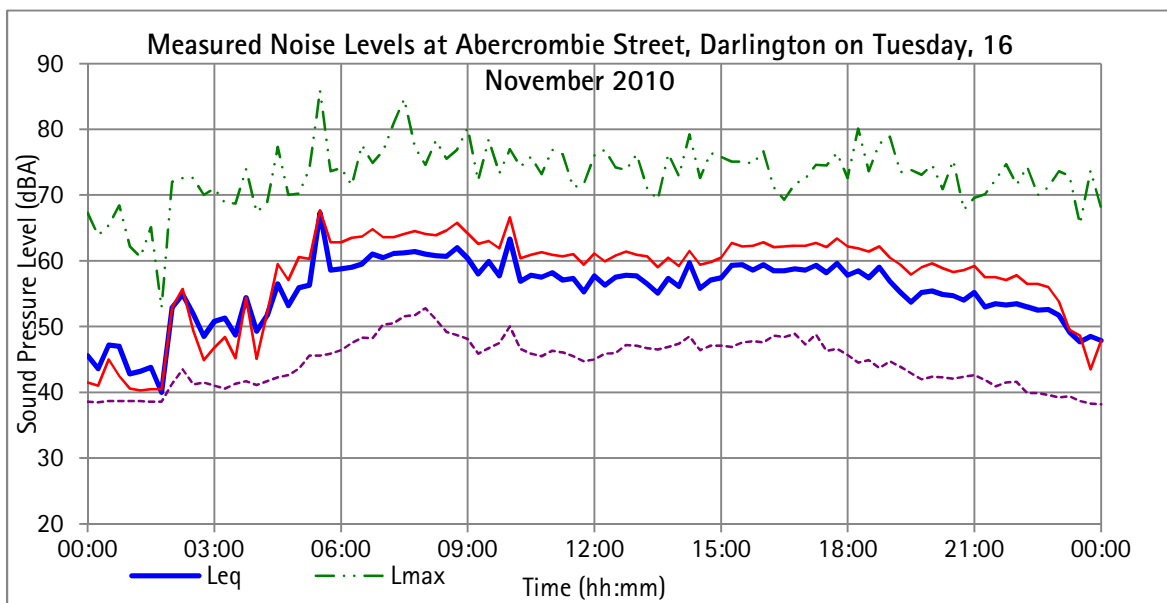
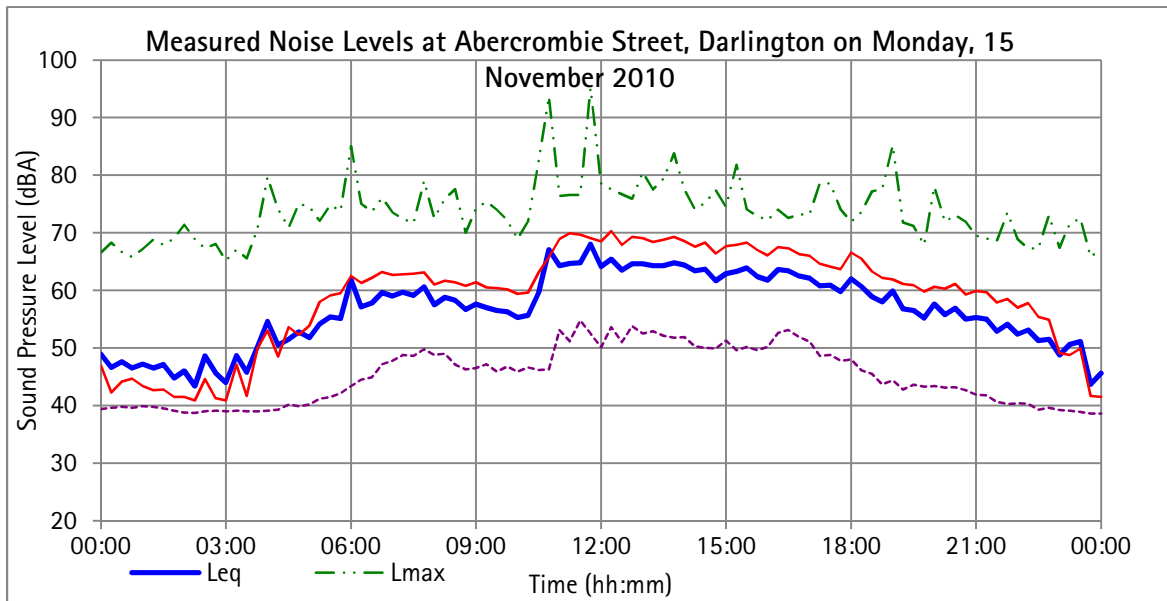












APPENDIX D

CONSTRUCTION NOISE AND VIBRATION MANAGEMENT WORK PRACTICES

Construction noise control measures

With regard to construction activities, reference will be made to *AS2436 – 1981: Guide to noise control on construction, maintenance and demolition sites*, which offers detailed guidance on the control of noise from demolition and construction activities. In particular, it is proposed that various practices be adopted during construction, including:

- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise;
- monitoring typical levels of noise during critical periods and at sensitive locations;
- All site access roads will be kept even so as to mitigate the potential for vibration from trucks.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- selection of plant with low inherent potential for generation of noise;
- erection of barriers as necessary around items such as generators or high duty compressors;
- siting of noisy / vibratory plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

Construction vibration control measures

In order to minimise potential vibration impacts during demolition and construction, it is proposed that various practices be adopted, including:

- limiting the hours of operation of site activities likely to create high levels of vibration;
- monitoring typical levels of construction vibration during critical periods and at sensitive locations;
- selection of plant and methods with low inherent potential for generation of vibration.

APPENDIX E

INP – DERIVATION OF PROJECT SPECIFIC NOISE LEVELS

Intrusiveness Criteria

The intrusiveness noise assessment is based on knowledge of the background noise level at the receiver location. The intrusiveness criterion is the background noise level at the nearest noise sensitive location plus 5 dB. Therefore the noise emissions from the premises are considered to be intrusive if the A-weighted source noise level ($L_{Aeq, 15min}$) is greater than the background noise level (L_{A90}) plus 5 dB. In the INP, the background noise level is called the Rating Background Level (RBL).

Table E1

Industrial Noise Policy time periods and ambient noise levels

Period	Time period	RBL L_{A90} dB	L_{Aeq} dB
<i>Darlington Lane</i>			
Day	0700-1800hrs	44	56
Evening	1800-2200hrs	43	50
Night	2200-0700hrs	39	48
<i>Abercrombie St</i>			
Day	0700-1800hrs	45	59
Evening	1800-2200hrs	43	58
Night	2200-0700hrs	39	54
<i>School-internal</i>			
Day*	0700-1800hrs	35	49

*Based on noise logging data from Abercrombie Street and 10dB noise reduction through an open window.

Based upon the data summarised in Table E1, noise limits for intrusiveness have been calculated in accordance with the INP and are presented in Table E2 below.

Table E2

Calculated intrusiveness criteria

Time of Day	Rating Background Level, L_{A90} dB	Intrusiveness Criteria (RBL + 5 dB) $L_{Aeq 15 min}$
<i>Darlington Lane</i>		
Day	44	49
Evening	43	48
Night	39	44
<i>Abercrombie St</i>		
Day	45	50
Evening	43	48
Night	39	44

Time of Day	Rating Background Level, L_{A90} dB	Intrusiveness Criteria (RBL + 5 dB) $L_{Aeq\ 15\ min}$
<i>School-internal</i>		
When in use	35	NA
<i>Commercial</i>		
When in use	59	NA

It should be noted that the INP does not require the assessment of intrusive noise at educational facilities or commercial receivers.

Amenity Criteria

The Amenity Criteria are designed to prevent industrial noise continually increasing above an acceptable level. The initial stage in determining the Amenity Criteria is to correct the *acceptable noise levels* set for the appropriate amenity area with the baseline noise monitoring. The area surrounding the proposed development is considered a suburban zone. The acceptable and recommended maximum noise levels for residences in an urban area are detailed in Table E3 below.

Table E3

Recommended L_{Aeq} noise levels from industrial noise sources in urban areas

Period	Recommended Noise Level L_{Aeq} dB	
	Acceptable	Recommended Maximum
<i>Residences</i>		
Day	60	65
Evening	50	55
Night	45	50
<i>School Classroom-internal</i>		
When in use	35	40
<i>Commercial</i>		
When in use	65	70

Source: Table 2.1 NSW DECCW Industrial Noise Policy

Note: Where internal noise levels are specified, external noise levels 10dB above internal noise levels apply, based on an open window.

Based on the acceptable levels presented in Table E3, the L_{Aeq} values from Table E1 are adjusted in order to determine the Amenity Criteria using the published correction factors provided in Table 2.2 of the INP. Table E4 overleaf summarises these correction factors.

Table E4

Modification to acceptable noise level (L_{Aeq}) to account for existing level industrial noise

Total Existing L_{Aeq} noise level from industrial sources, dB	Maximum L_{Aeq} noise level for noise from new sources alone, dB
$\geq$ Acceptable noise level plus 2	If existing noise level is <i>likely</i> to decrease in future: acceptable noise level minus 10 If existing noise level is <i>unlikely</i> to decrease in future: existing level minus 10
Acceptable noise level plus 1	Acceptable noise level minus 8
Acceptable noise level	Acceptable noise level minus 8
Acceptable noise level minus 1	Acceptable noise level minus 6
Acceptable noise level minus 2	Acceptable noise level minus 4
Acceptable noise level minus 3	Acceptable noise level minus 3
Acceptable noise level minus 4	Acceptable noise level minus 2
Acceptable noise level minus 5	Acceptable noise level minus 2
Acceptable noise level minus 6	Acceptable noise level minus 1
$<$ Acceptable noise level minus 6	Acceptable noise level

Source: Table 2.2 NSW DECCW Industrial Noise Policy

The Amenity Criteria for the operational period is presented below.

Table E5

Calculated amenity criteria

Period	L_{Aeq} dB	Amenity Criteria $L_{Aeq \text{ period}^\dagger}$ dB
<i>Darlington Lane</i>		
Day	56	58
Evening	50	44
Night	48	38
<i>Abercrombie St</i>		
Day	59	54
Evening	58	48
Night	54	44
<i>School Classroom-internal</i>		
When in use	49	39
<i>Commercial</i>		
When in use	59	65

Determination of Project Specific Noise Levels

The final process in determining the operational noise limits for the development, called the *project specific noise levels*, is to select the more stringent of either the Intrusiveness or Amenity Criteria that have been calculated.

At Abercrombie Street, the Intrusiveness Criteria is more stringent than the Amenity Criteria and are therefore the limiting criteria for this assessment as indicated in Table E6.

Table E6
Project specific noise levels for Abercrombie Street receivers

Period	Intrusiveness Criteria $L_{Aeq, 15mins}$ dB	Amenity Criteria $L_{Aeq, period}$ dB	Project Specific Criteria
<i>Residences</i>			
Day	50	54	50dB $L_{Aeq, 15mins}$
Evening	48	48	48dB $L_{Aeq, 15mins}$
Night	44	44	44dB $L_{Aeq, 15mins}$
<i>School Classroom-internal</i>			
When in use	NA	39	39dB $L_{Aeq, period}$
<i>Commercial</i>			
When in use	NA	65	65dB $L_{Aeq, period}$

In their application note dated 4th May 2006, the DECCW recommends that where the predicted amenity noise level is below the intrusive noise level for a proposed development, as is the case during the evening and night-time periods at Darlington Lane for this assessment, the operational noise levels need to be considered in relation to the differing assessment periods associated with each criteria.

Table E7
Project specific noise levels for Darlington Lane receivers

Period	Intrusiveness Criteria $L_{Aeq, 15mins}$ dB	Amenity Criteria $L_{Aeq, period}$ dB
Day	49	58
Evening	48	44
Night	44	38

APPENDIX F

SOURCE NOISE LEVELS

Construction noise sources

A variety of demolition and construction equipment will be used for this project. The following schedule of construction equipment and their noise levels as taken from *AS2436 – 1981: Guide to noise control on construction, maintenance and demolition sites*, and from construction noise data collected on previous Marshall Day Acoustics' projects, has been used in our assessment.

Table F1
Construction noise sources

Noise source	Sound Power Level, dBA, L_w	Mid value dBA, L_w
Excavator fitted with pneumatic breaker	110 to 124	117
Excavator (100 to 200kW)	108 to 112	110
Tracked loaders	115 to 118	117
Cranes	97 to 107	103
Trucks	103 to 108	106
Rotary bored piling rig	112 to 124	118
Concrete trucks	107 to 116	112
Drilling rig	96 to 109	103
Compressor (silenced)	90 to 100	95
Concrete pump	102 to 107	105
Concrete Cutters	105 to 110	107
Generator	106 to 108	107
Water pump	99 to 105	103
Skill saw	105 to 110	108
Hammering (timber)	112 to 115	114
Drills	93 to 97	95

Operational noise sources

Data from the Marshall Day Acoustics' noise source database have been used to calculate the sound power levels of noise sources associated with the proposed development. Where possible, noise sources have been measured on site. Source noise levels used in our calculations is provided for reference below.

Vehicle activity

Data from the Marshall Day Acoustics' noise source database have been used to calculate the sound power levels of noise sources associated with vehicle activities. The sound power level data averaged over an event is provided in Table F1.

Table F1

Sound power levels of vehicle activities (L_{eq}), dB re 10^{-12} W

Description	Octave band centre frequency							Hz
	63	125	250	500	1k	2k	4k	
Car "normal operation"	84	77	61	65	63	64	56	dBW
Car "worst-case operation"	86	91	81	79	74	73	62	dBW

Maximum noise levels (L_{max}) of vehicle and outdoor activities have also been measured and the sound power level data for these are provided in Table F4.

Table F2

Sound power levels of vehicle activities and raised voice (L_{max}), dB re 10^{-12} W

Noise source	Octave band centre frequency							Hz
	63	125	250	500	1k	2k	4k	
Car "normal operation"	110	103	96	90	87	85	82	dBW
Car "worst-case operation"	111	109	105	99	97	93	93	dBW
Loud car stereo	95	94	89	88	83	76	72	dBW
Rowdy voices	62	71	87	91	95	91	85	dBW

A 'normal' vehicle can be described as "a vehicle being driven in a sensible manner." A 'worst-case' vehicle can be described as a "V-8 or high-powered vehicle being driven in a reckless manner."

Outdoor activity

The sound power level data used in our calculations of normal voice conversation is provided in Table F3.

Table F3

Sound power levels of voice conversation (L_{eq}), dB re 10^{-12} W

Description	Octave band centre frequency							Hz
	63	125	250	500	1k	2k	4k	
Male voice normal	-	50	56	58	51	45	43	dBW

Maximum noise levels (L_{max}) outdoor activities have also been measured and the sound power level data for these are provided in Table F4.

Table F4

Sound power levels of raised voice (L_{max}), dB re 10^{-12} W

Noise source	Octave band centre frequency							Hz
	63	125	250	500	1k	2k	4k	
Rowdy voices	62	71	87	91	95	91	85	dBW

Truck access

Data from the Marshall Day Acoustics' noise source database have been used to calculate the sound power levels of noise sources associated with truck access to the site. The sound power level data averaged over an event is provided in Table F5.

Table F5

Sound power levels of vehicle activities (L_{eq}), dB re 10^{-12} W

Description	Octave band centre frequency							Hz
	63	125	250	500	1k	2k	4k	
Truck 10-20km/hr	109	111	106	101	99	98	97	dBW