

1 Sound Level or Noise Level

The terms “sound” and “noise” are almost interchangeable, except that in common usage “noise” is often used to refer to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. The human ear responds to changes in sound pressure over a very wide range. The loudest sound pressure to which the human ear responds is ten million times greater than the softest. The decibel (abbreviated as dB) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or Lp are commonly used to represent Sound Pressure Level. The symbol LA represents A-weighted Sound Pressure Level. The standard reference unit for Sound Pressure Levels expressed in decibels is 2×10^{-5} Pa.

2 “A” Weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an “A-weighting” filter. This is an electronic filter having a frequency response corresponding approximately to that of human hearing.

People’s hearing is most sensitive to sounds at mid frequencies (500 Hz to 4000 Hz), and less sensitive at lower and higher frequencies. Thus, the level of a sound in dBA is a good measure of the loudness of that sound. Different sources having the same dBA level generally sound about equally loud.

A change of 1 dBA or 2 dBA in the level of a sound is difficult for most people to detect, whilst a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness. The table below lists examples of typical noise levels

Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely noisy
110	Grinding on steel	
100	Loud car horn at 3 m	Very noisy
90	Construction site with pneumatic hammering	
80	Kerbside of busy street	Loud
70	Loud radio or television	
60	Department store	Moderate to quiet
50	General Office	
40	Inside private office	Quiet to very quiet
30	Inside bedroom	
20	Recording studio	Almost silent

Other weightings (eg B, C and D) are less commonly used than A-weighting. Sound Levels measured without any weighting are referred to as “linear”, and the units are expressed as dB(lin) or dB.

3 Sound Power Level

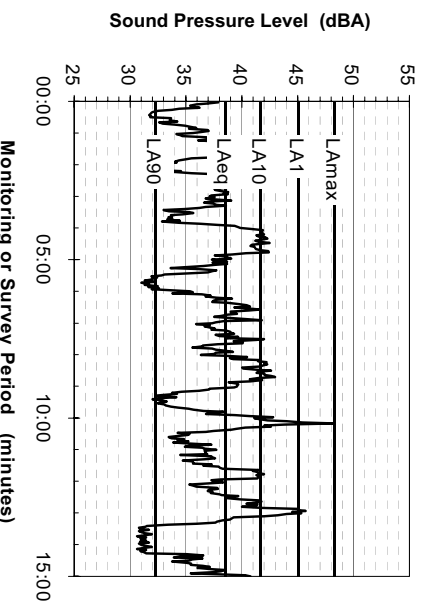
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or W, or by the reference unit 10^{-12} W.

The relationship between Sound Power and Sound Pressure may be likened to an electric radiator, which is characterised by a power rating, but has an effect on the surrounding environment that can be measured in terms of a different parameter, temperature.

4 Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels LA_N, where LA_N is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the LA₁ is the noise level exceeded for 1% of the time, LA₁₀ the noise exceeded for 10% of the time, and so on.

The following figure presents a hypothetical 15 minute noise survey, illustrating various common statistical indices of interest.



Of particular relevance, are:

LA₁ The noise level exceeded for 1% of the 15 minute interval.

LA₁₀ The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

LA₉₀ The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

LA_{eq} The A-weighted equivalent noise level (basically the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

When dealing with numerous days of statistical noise data, it is sometimes necessary to define the typical noise levels at a given monitoring location for a particular time of day. A standardised method is available for determining these representative levels.

This method produces a level representing the “repeatable minimum” LA₉₀ noise level over the daytime and night-time measurement periods, as required by the EPA. In addition the method produces mean or “average” levels representative of the other descriptors (LA_{eq}, LA₁₀, etc).

5 Tonality

Tonal noise contains one or more prominent tones (ie distinct frequency components), and is normally regarded as more offensive than “broad band” noise.

6 Impulsiveness

An impulsive noise is characterised by one or more short sharp peaks in the time domain, such as occurs during hammering.

7 Frequency Analysis

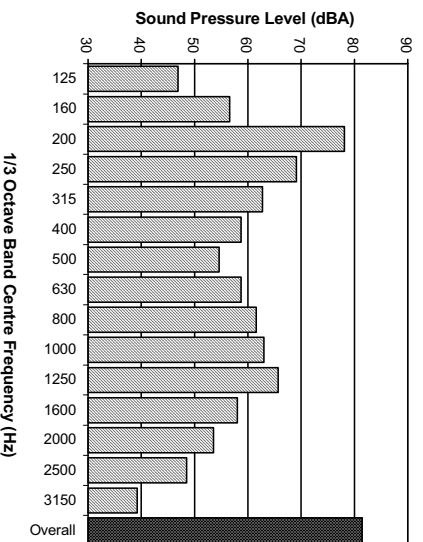
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal. This analysis was traditionally carried out using analogue electronic filters, but is now normally carried out using Fast Fourier Transform (FFT) analysers.

The units for frequency are Hertz (Hz), which represent the number of cycles per second.

Frequency analysis can be in:

- Octave bands (where the centre frequency and width of each band is double the previous band)
- 1/3 octave bands (3 bands in each octave band)
- Narrow band (where the spectrum is divided into 400 or more bands of equal width)

The following figure shows a 1/3 octave band frequency analysis where the noise is dominated by the 200 Hz band. Note that the indicated level of each individual band is less than the overall level, which is the logarithmic sum of the bands.



9 Human Perception of Vibration

People are able to “feel” vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual’s perception of motion or response to vibration depends very strongly on previous experience and expectations, and on other connotations associated with the perceived source of the vibration. For example, the vibration that a person responds to as “normal” in a car, bus or train is considerably higher than what is perceived as “normal” in a shop, office or dwelling.

10 Over-Pressure

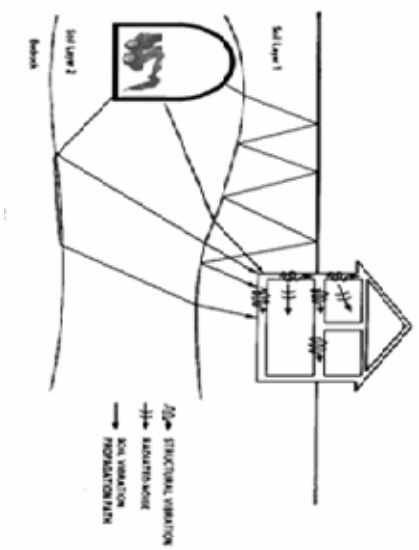
The term “over-pressure” is used to describe the air pressure pulse emitted during blasting or similar events. The peak level of an event is normally measured using a microphone in the same manner as linear noise (ie unweighted), at frequencies both in and below the audible range.

11 Ground-borne Noise, Structure-borne Noise and Regenerated Noise

Noise that propagates through a structure as vibration and is radiated by vibrating wall and floor surfaces is termed “structure-borne noise”, “ground-borne noise” or “regenerated noise”. This noise originates as vibration and propagates between the source and receiver through the ground and/or building structural elements, rather than through the air.

Typical sources of ground-borne or structure-borne noise include tunnelling works, underground railways, excavation plant (eg rockbreakers), and building services plant (eg fans, compressors and generators).

The following figure presents the various paths by which vibration and ground-borne noise may be transmitted between a source and receiver for construction activities occurring within a tunnel.



8 Vibration

Vibration may be defined as cyclic or transient motion. This motion can be measured in terms of its displacement, velocity or acceleration. Most assessments of human response to vibration or the risk of damage to buildings use measurements of vibration velocity. These may be expressed in terms of “peak” velocity or “rms” velocity.

The former is the maximum instantaneous velocity, without any averaging, and is sometimes referred to as “peak particle velocity”, or PPV. The latter incorporates “root mean squared” averaging over some defined time period.

Vibration measurements may be carried out in a single axis or alternatively as triaxial measurements. Where triaxial measurements are used, the axes are commonly designated vertical, longitudinal (aligned toward the source) and transverse.

The common units for velocity are millimetres per second (mm/s). As with noise, decibel units can also be used, in which case the reference level should always be stated. A vibration level V, expressed in mm/s can be converted to decibels by the formula $20 \log (V/V_0)$, where V_0 is the reference level (10^{-9} m/s). Care is required in this regard, as other reference levels may be used by some organizations.

The term “regenerated noise” is also used in other instances where energy is converted to noise away from the primary source. One example would be a fan blowing air through a discharge grill. The fan is the energy source and primary noise source. Additional noise may be created by the aerodynamic effect of the discharge grill in the airstream. This secondary noise is referred to as regenerated noise



75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
75 mm @ 1:10,000 ORIGINAL

1	20/08/05	PA	1:10,000	1:5000
2	10/08/05	REVISION / DATE DESCRIPTION	1:10,000	1:5000

LEGEND



0 50 100

Scale = 1:5000

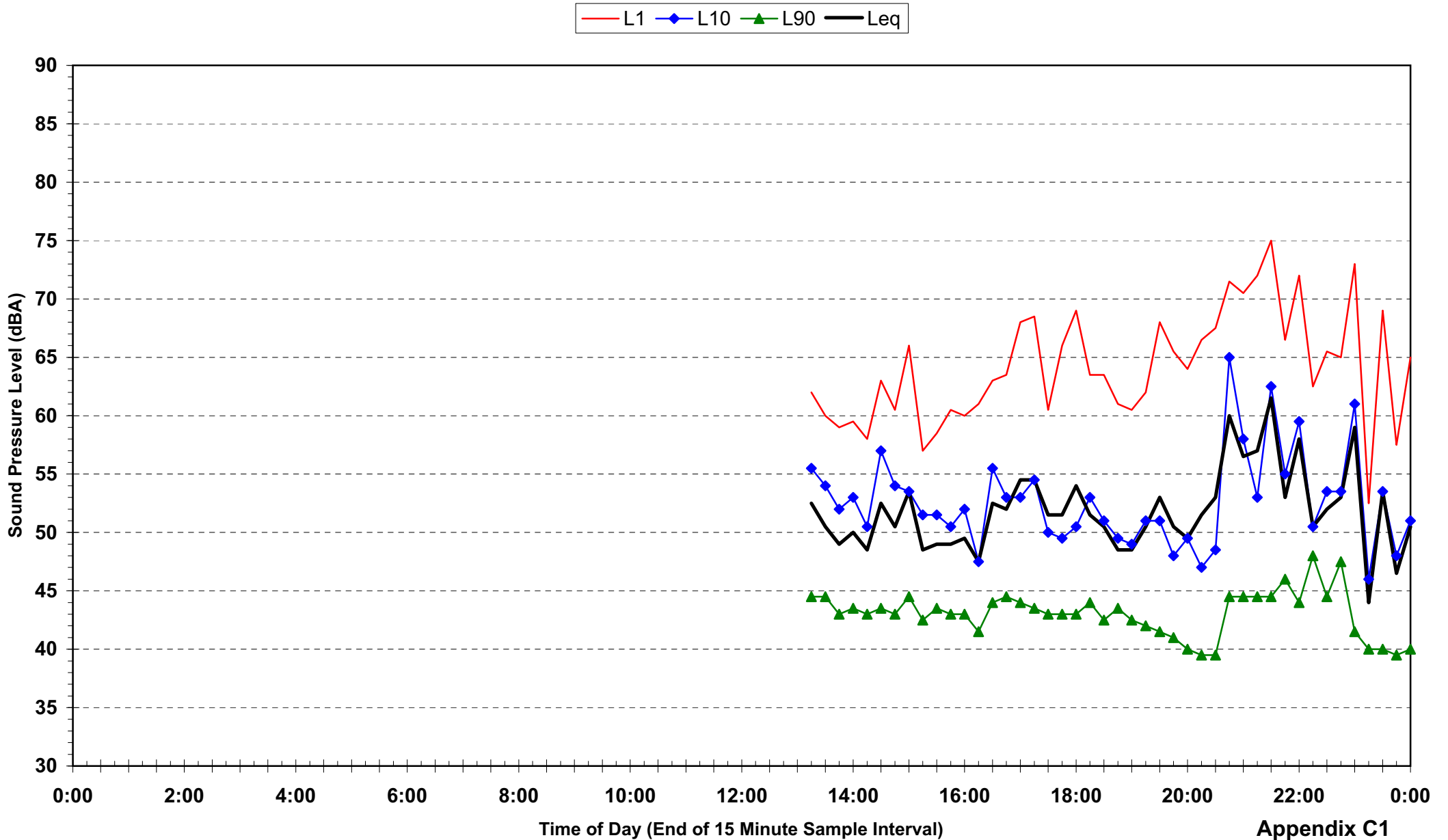


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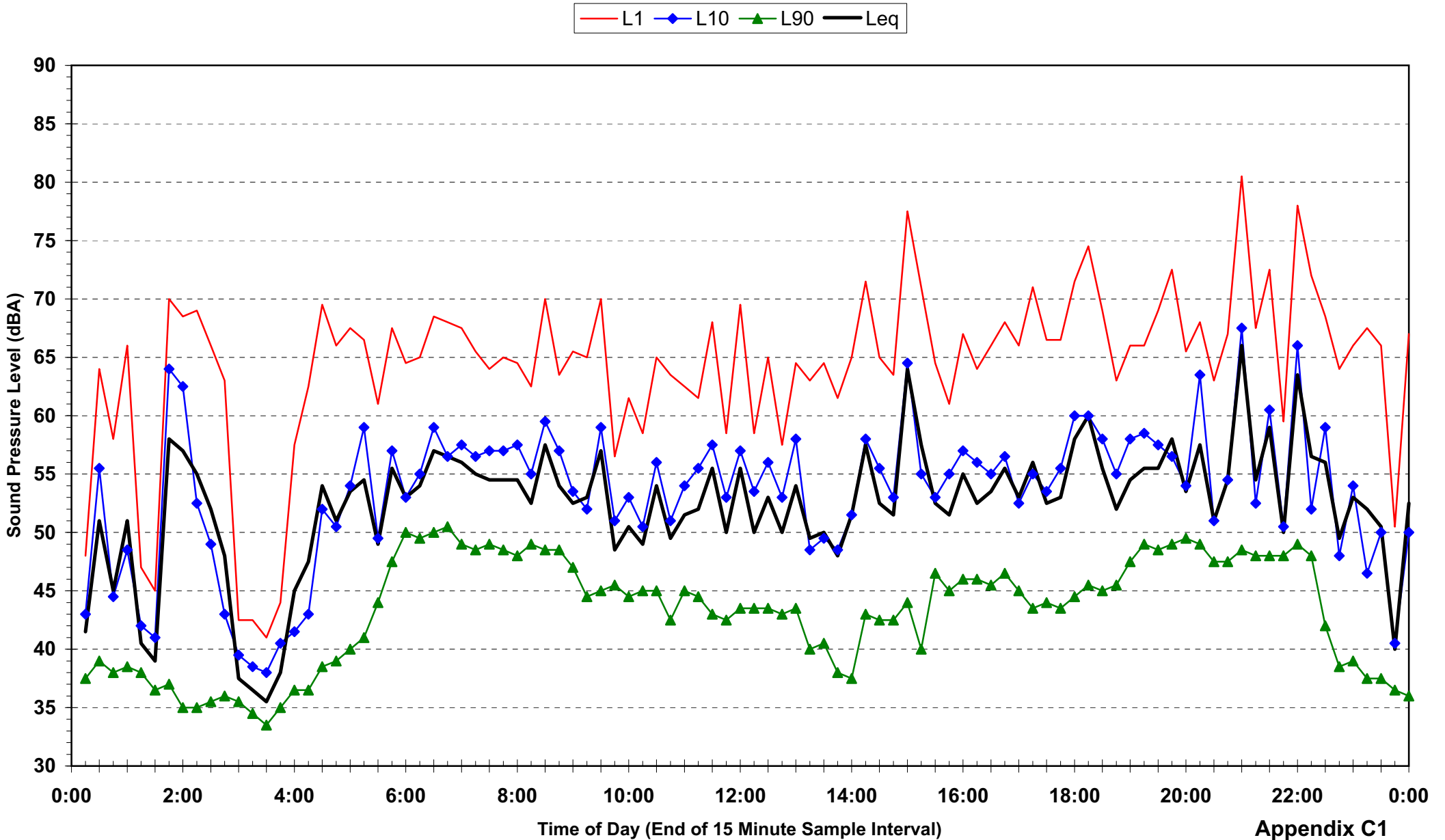
**10-5184R1 Glenfield North Junction PA
Appendix B - Site Map**

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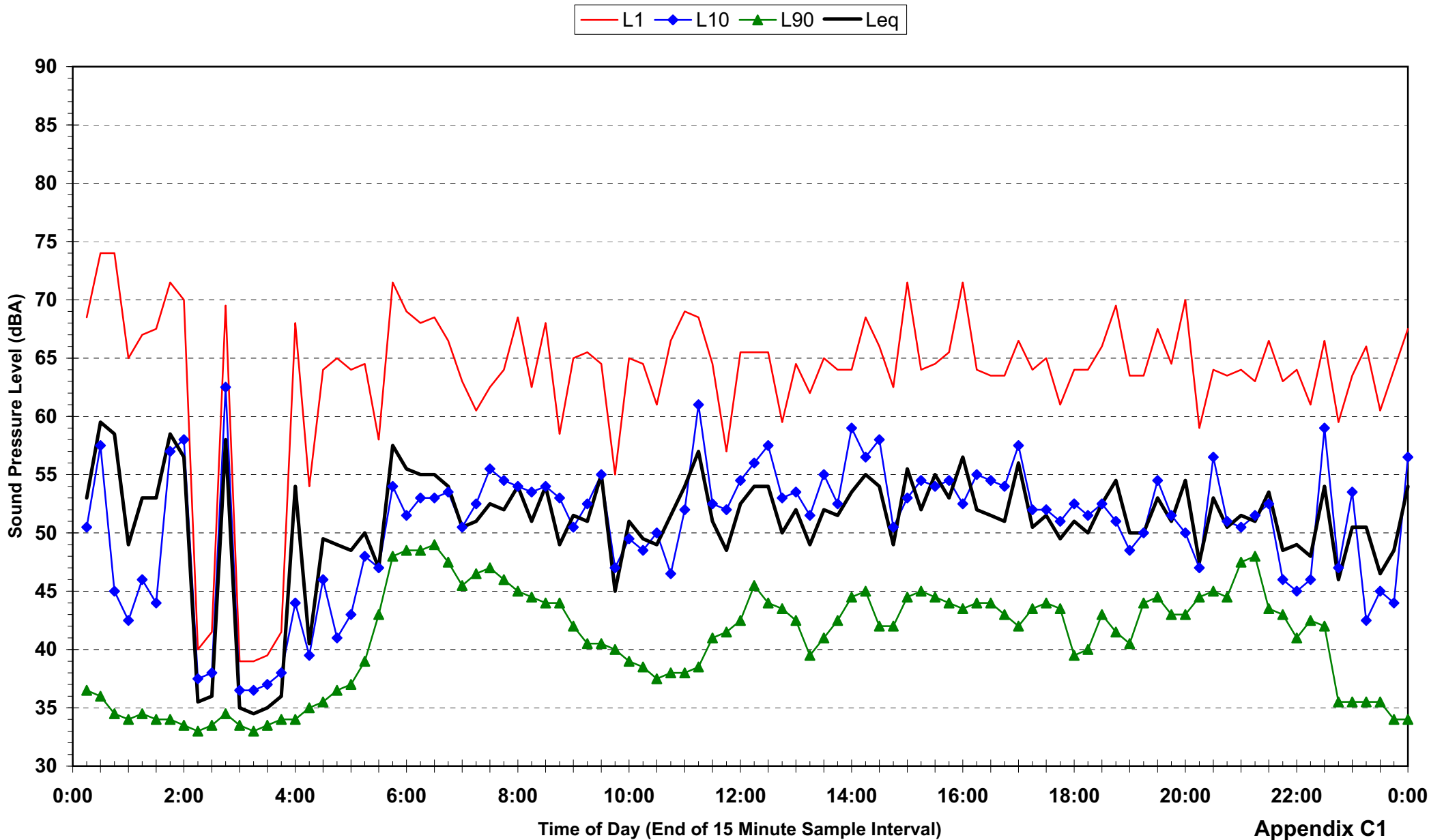
Statistical Ambient Noise Levels
15 Slessor Rd Casula - Tuesday 11 July 2006



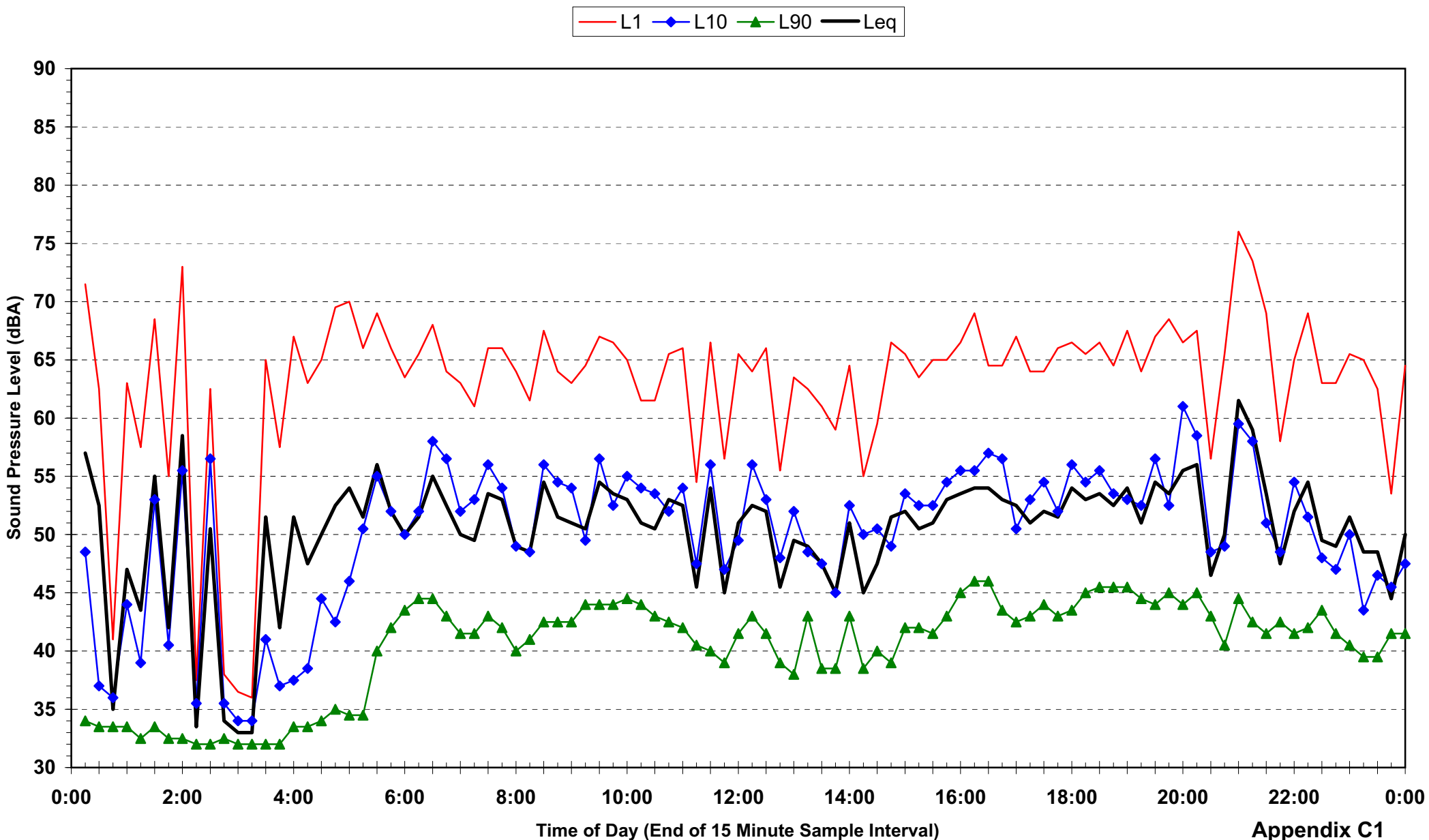
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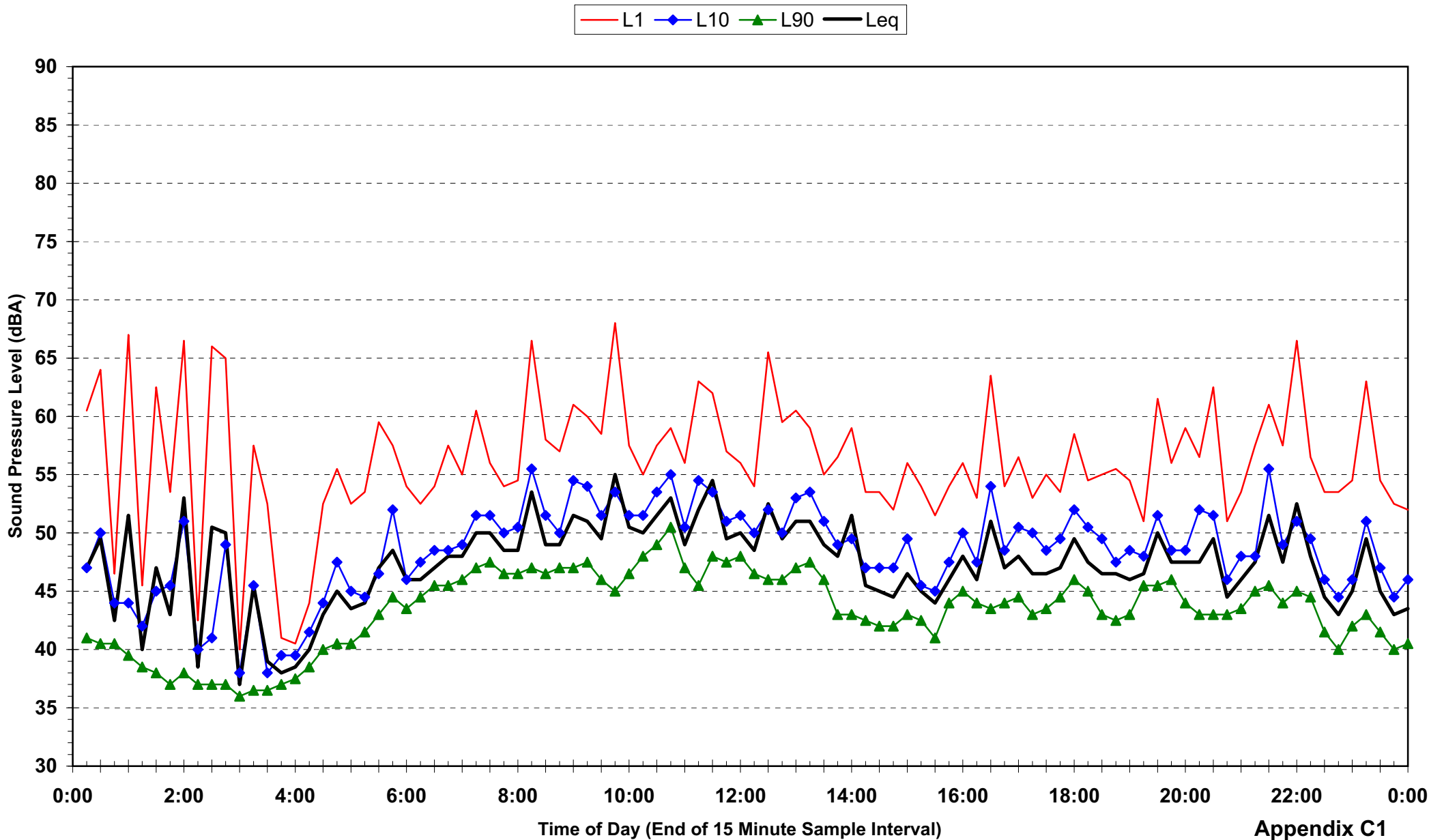
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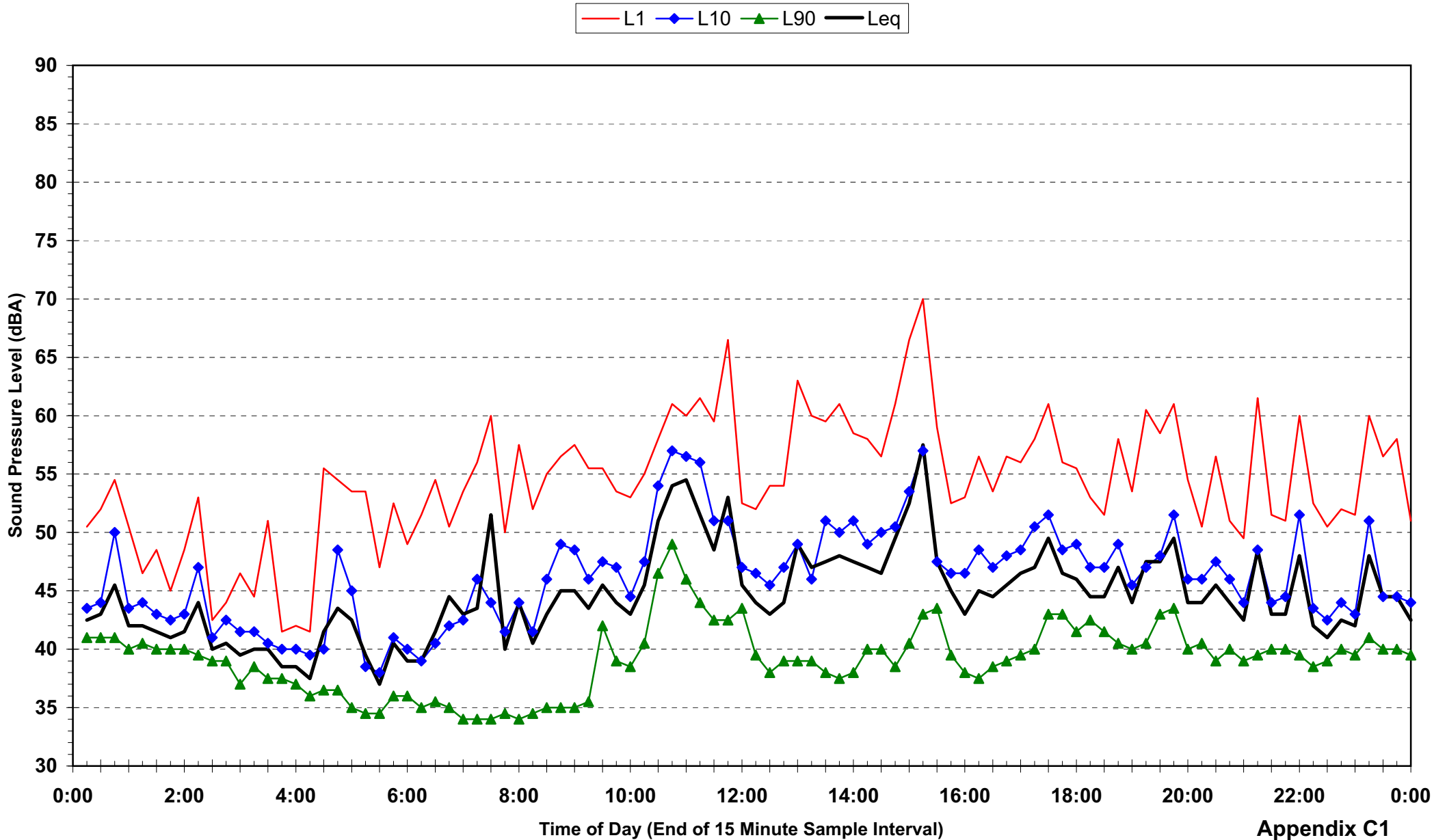
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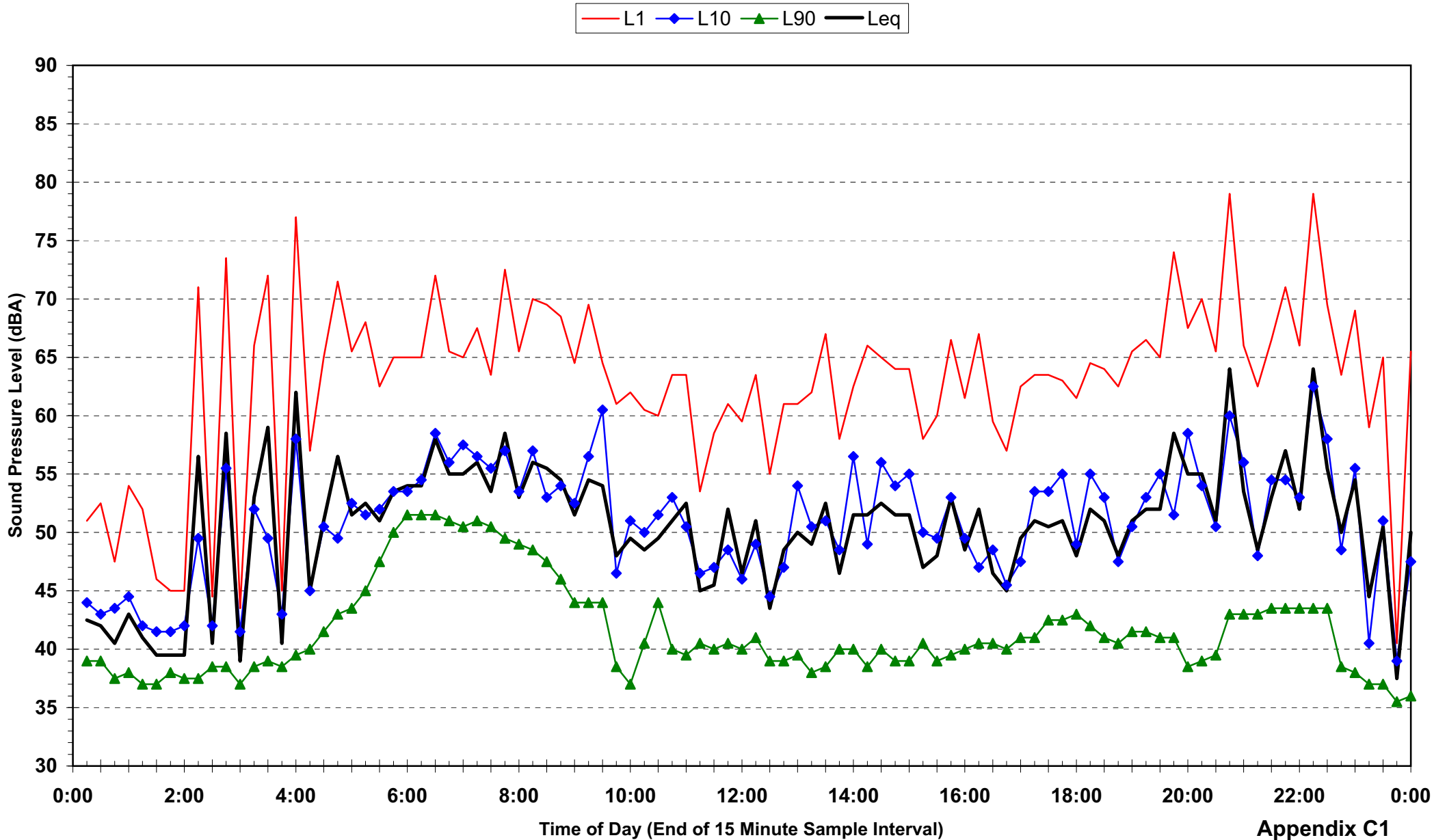
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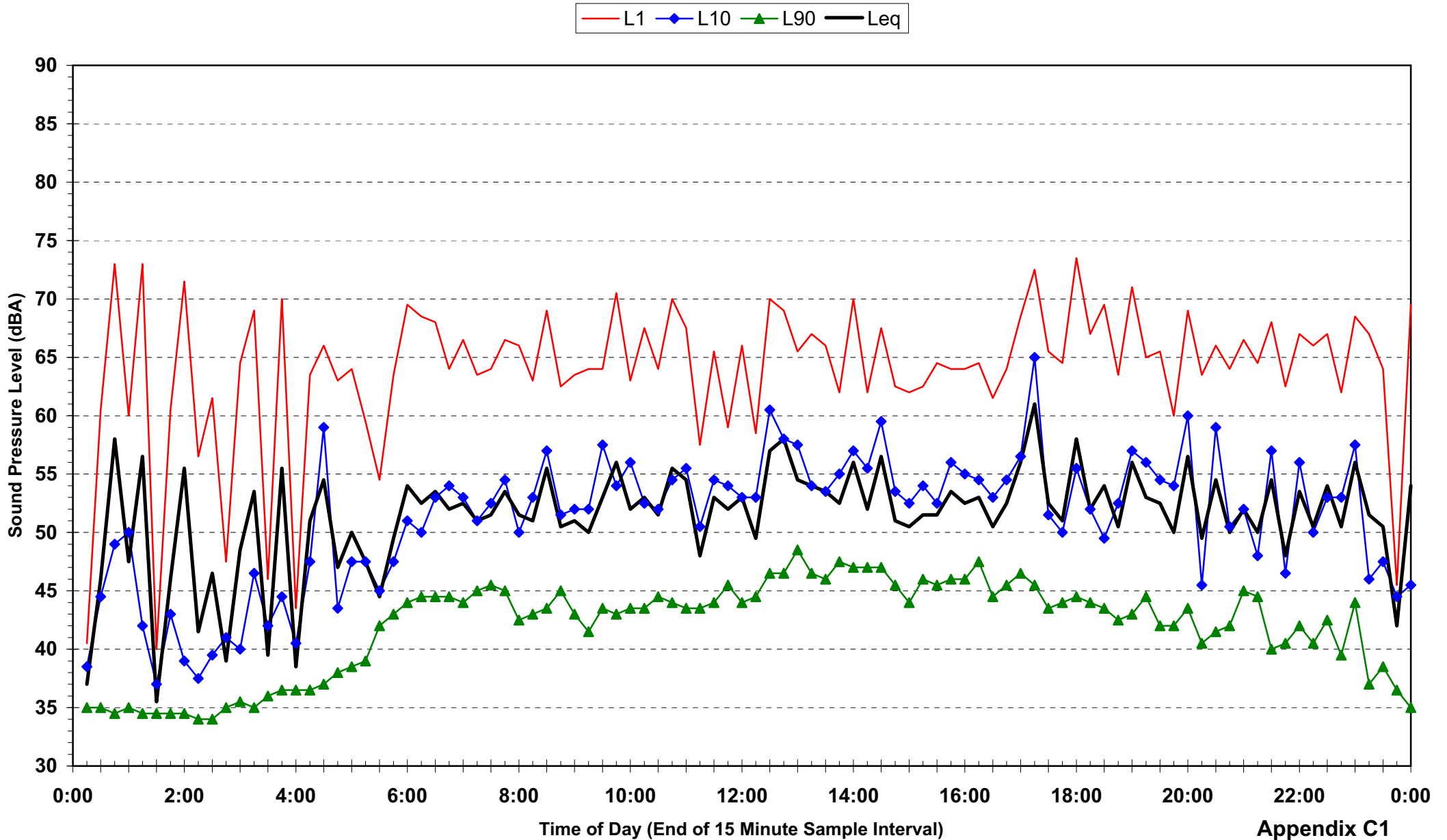
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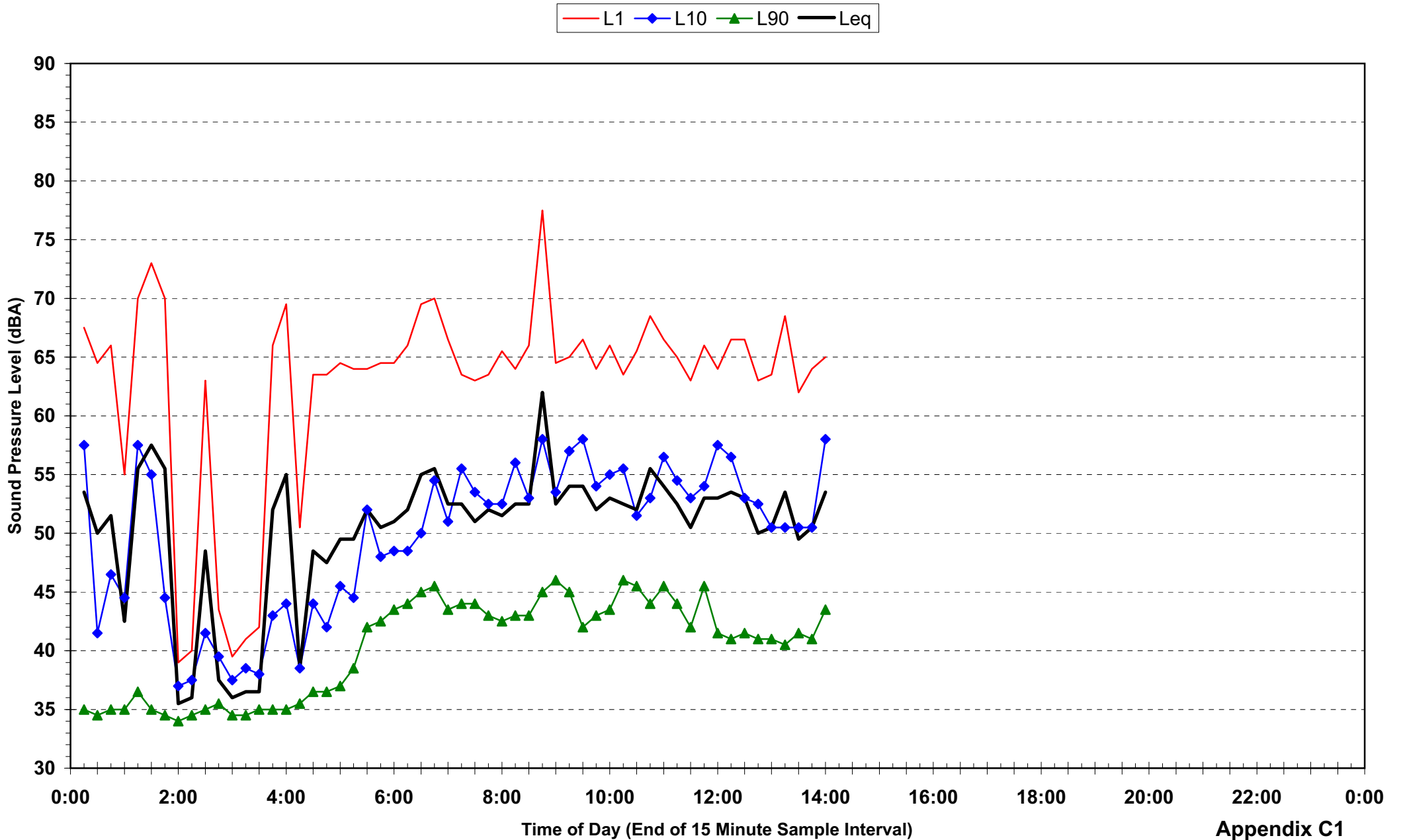


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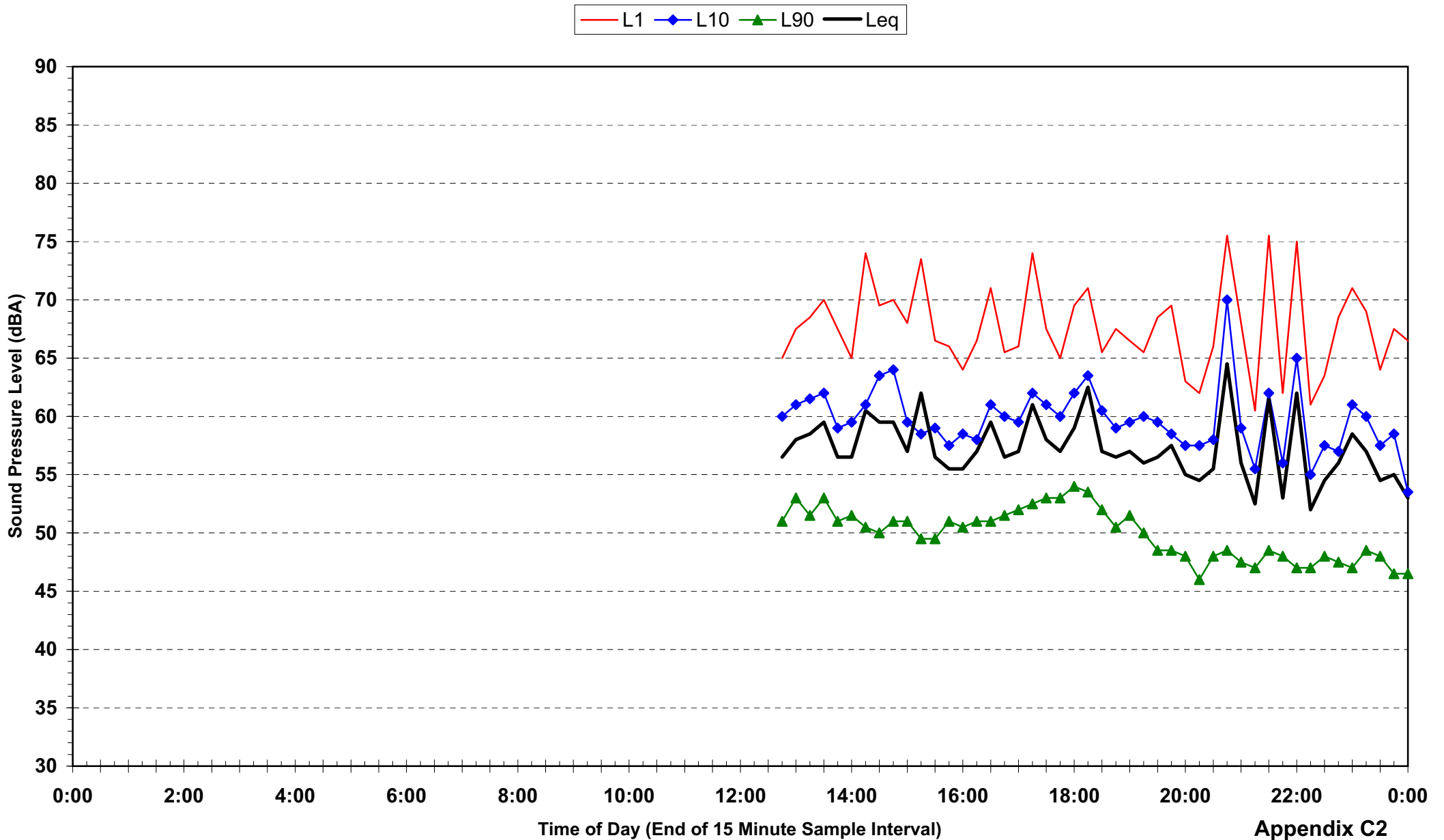


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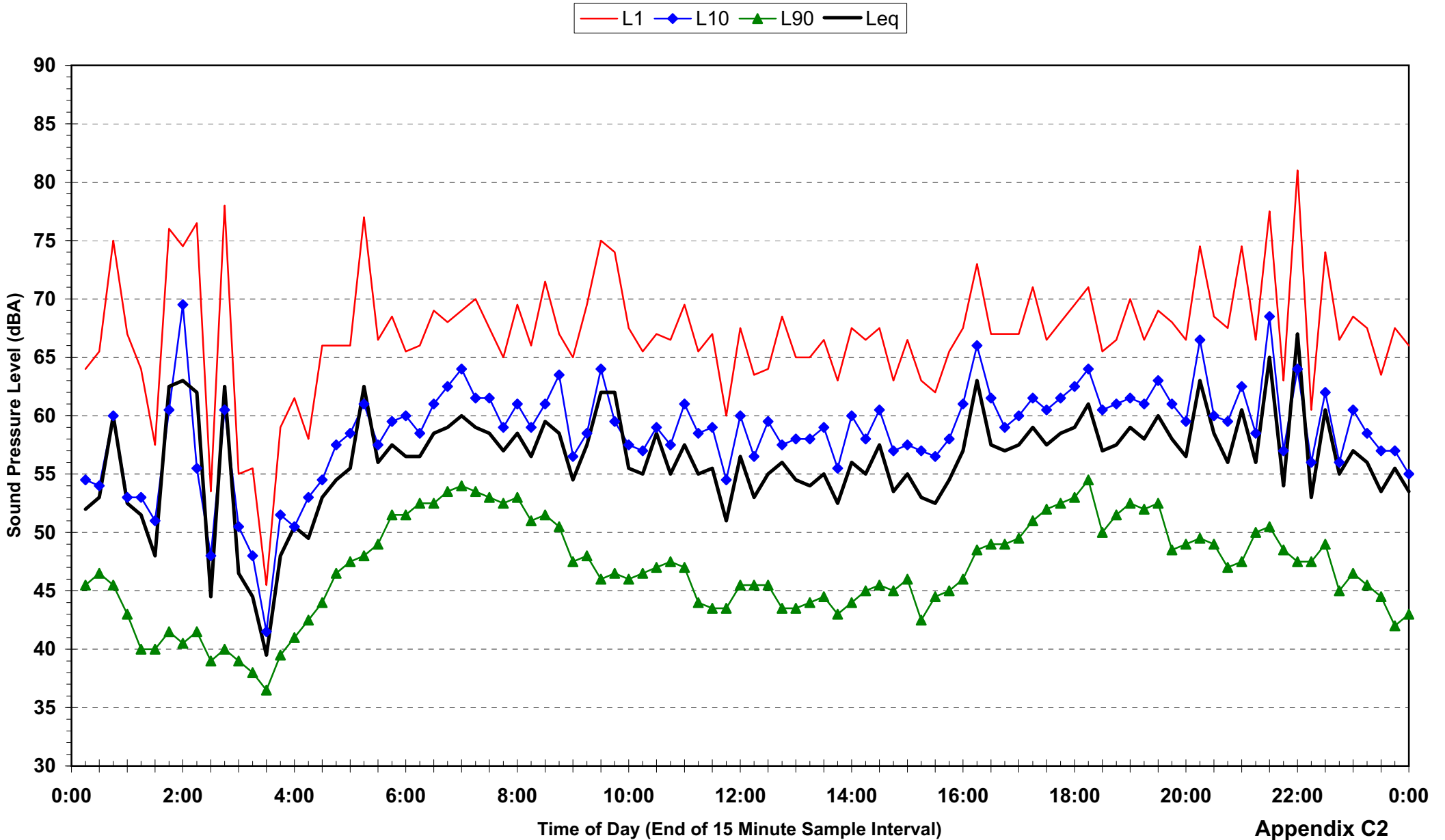




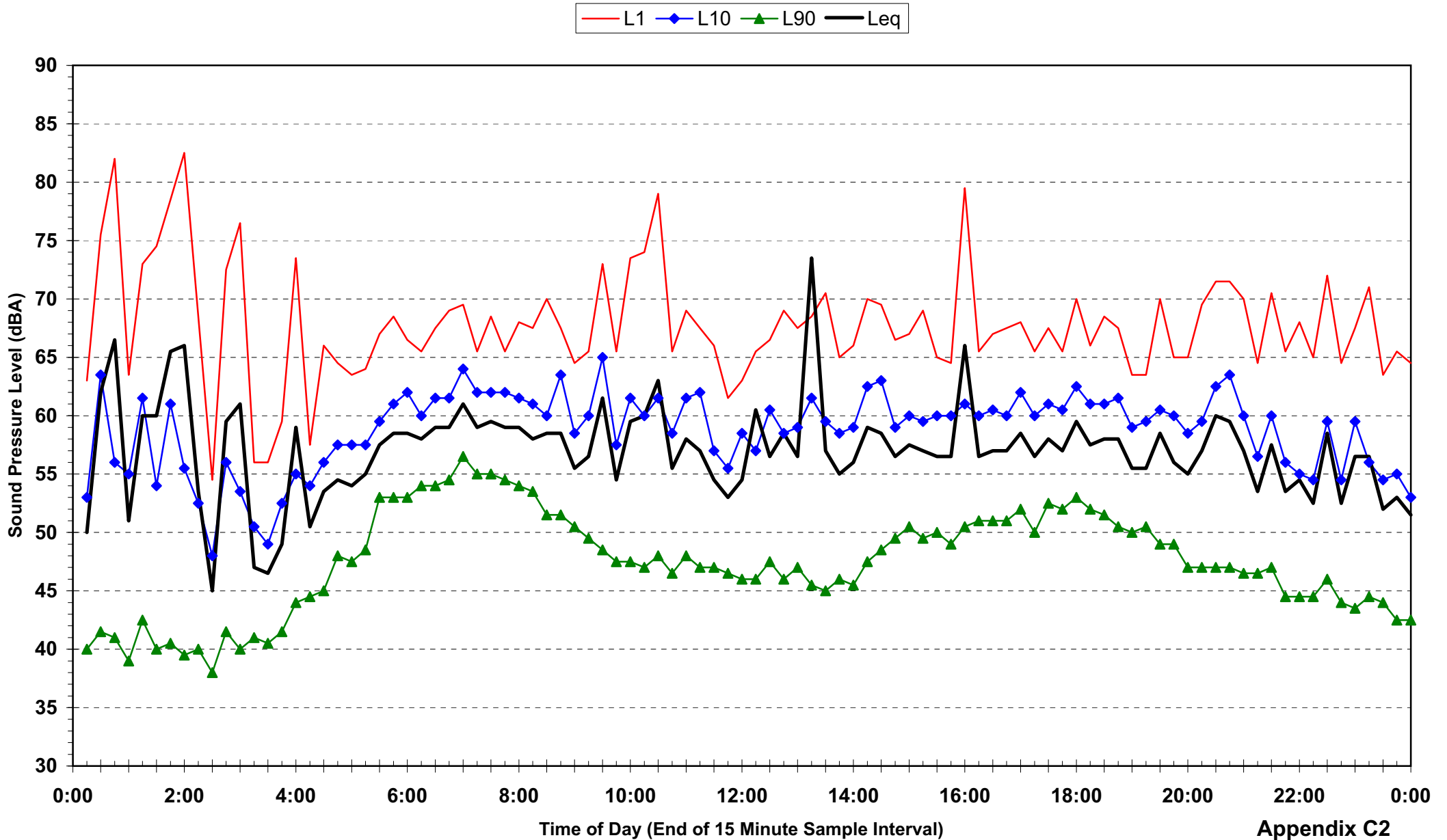
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6 Newtown Road, Glenfield - Tuesday 11 July 2006



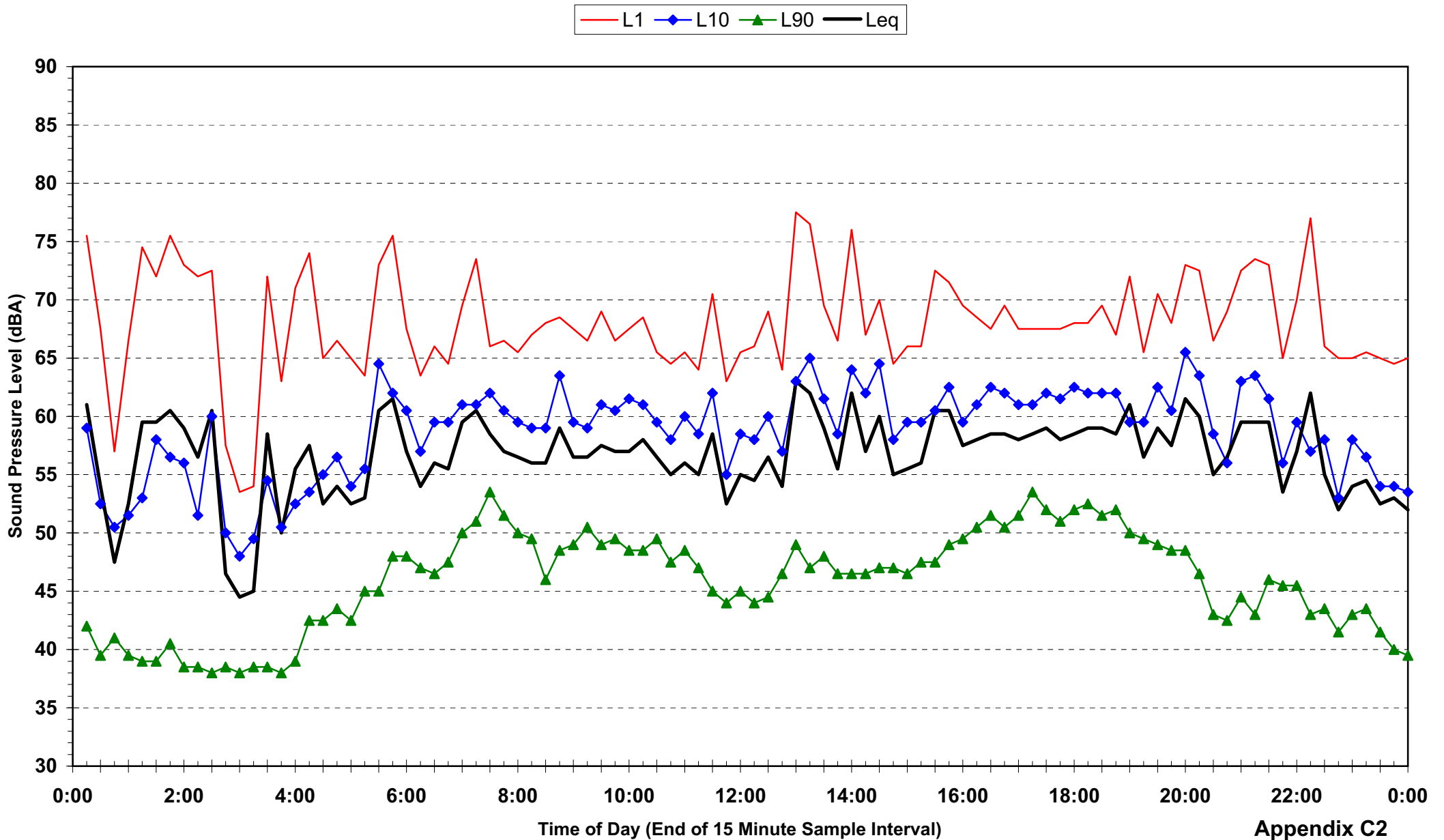
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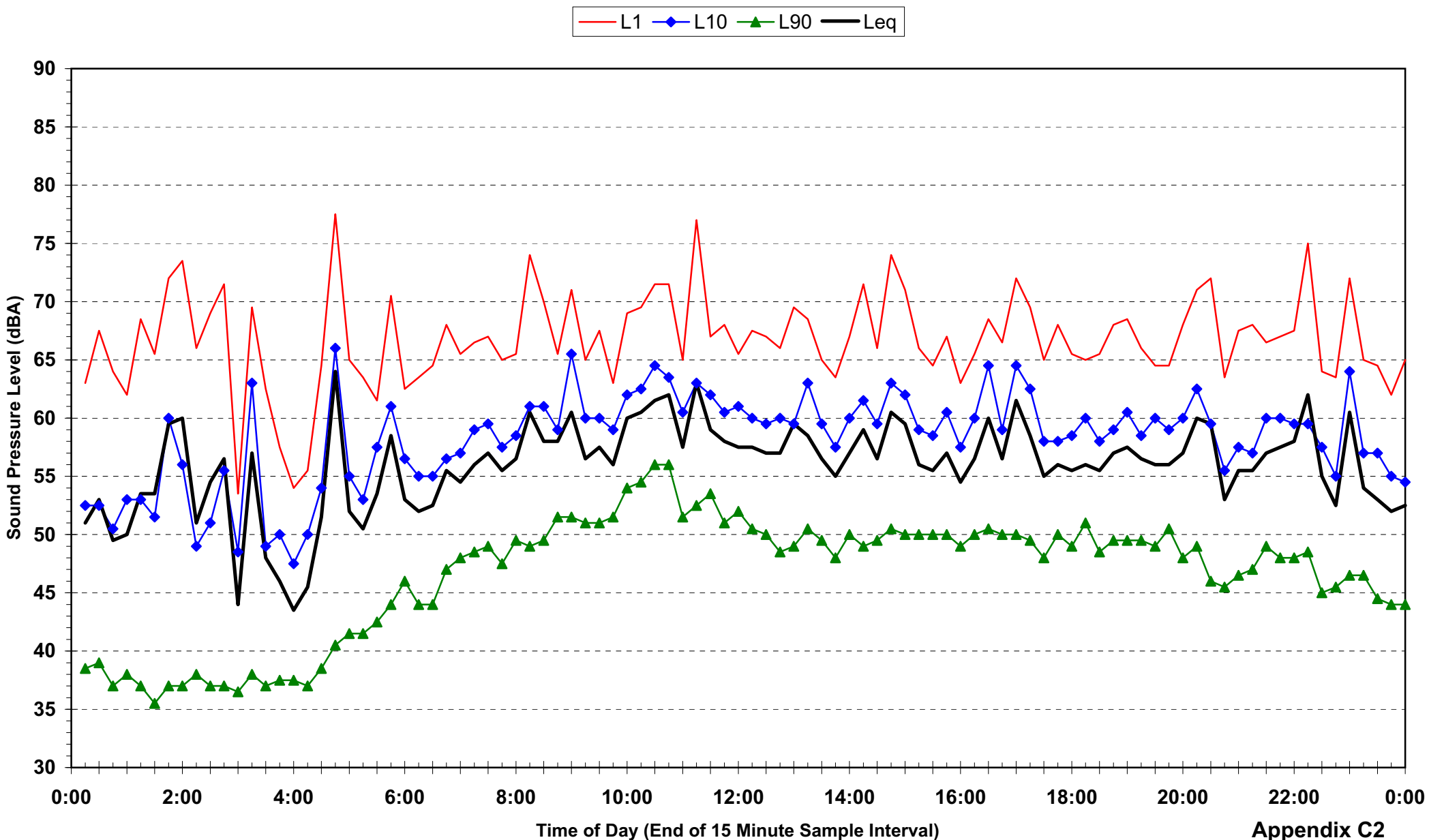
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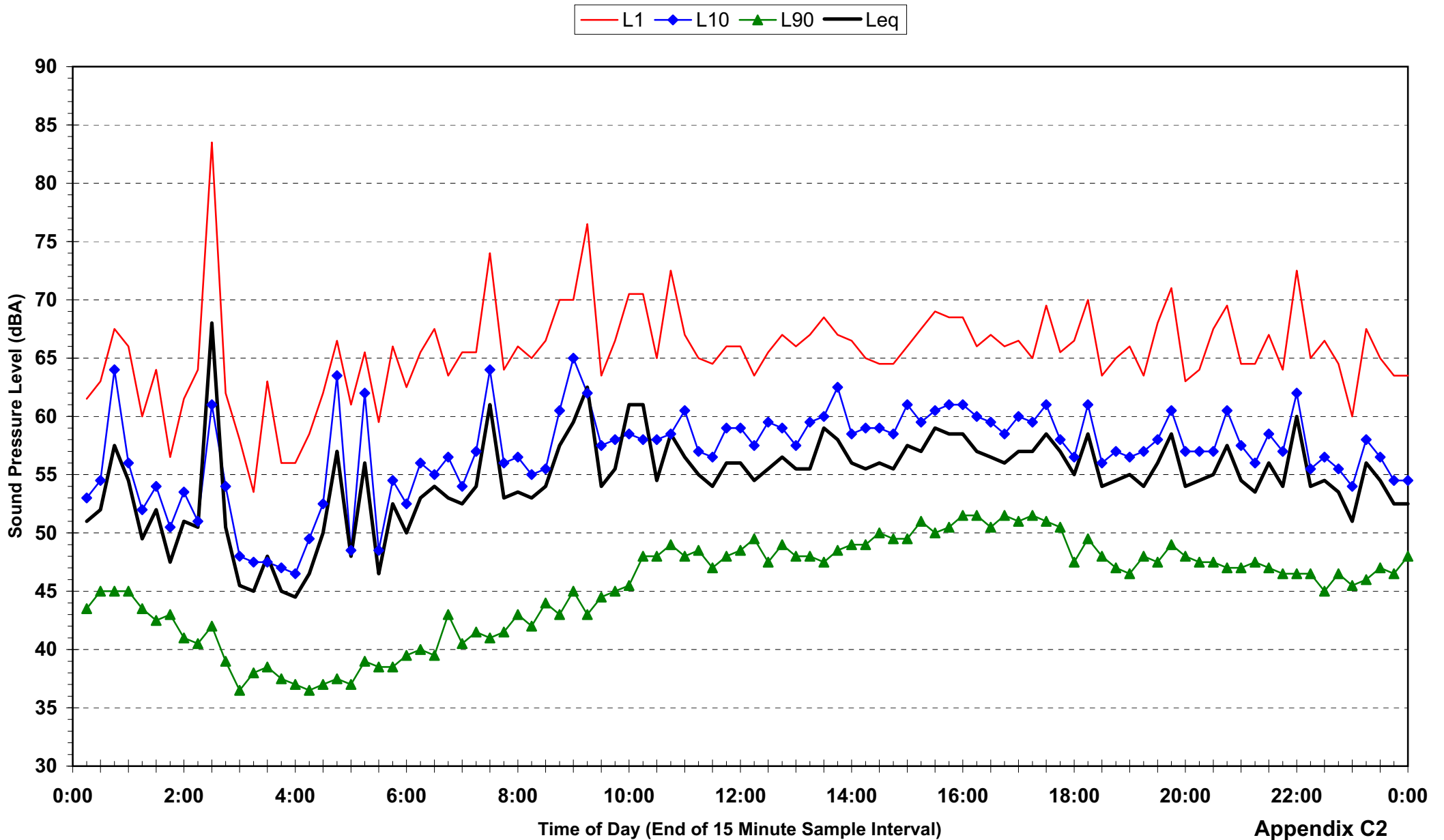
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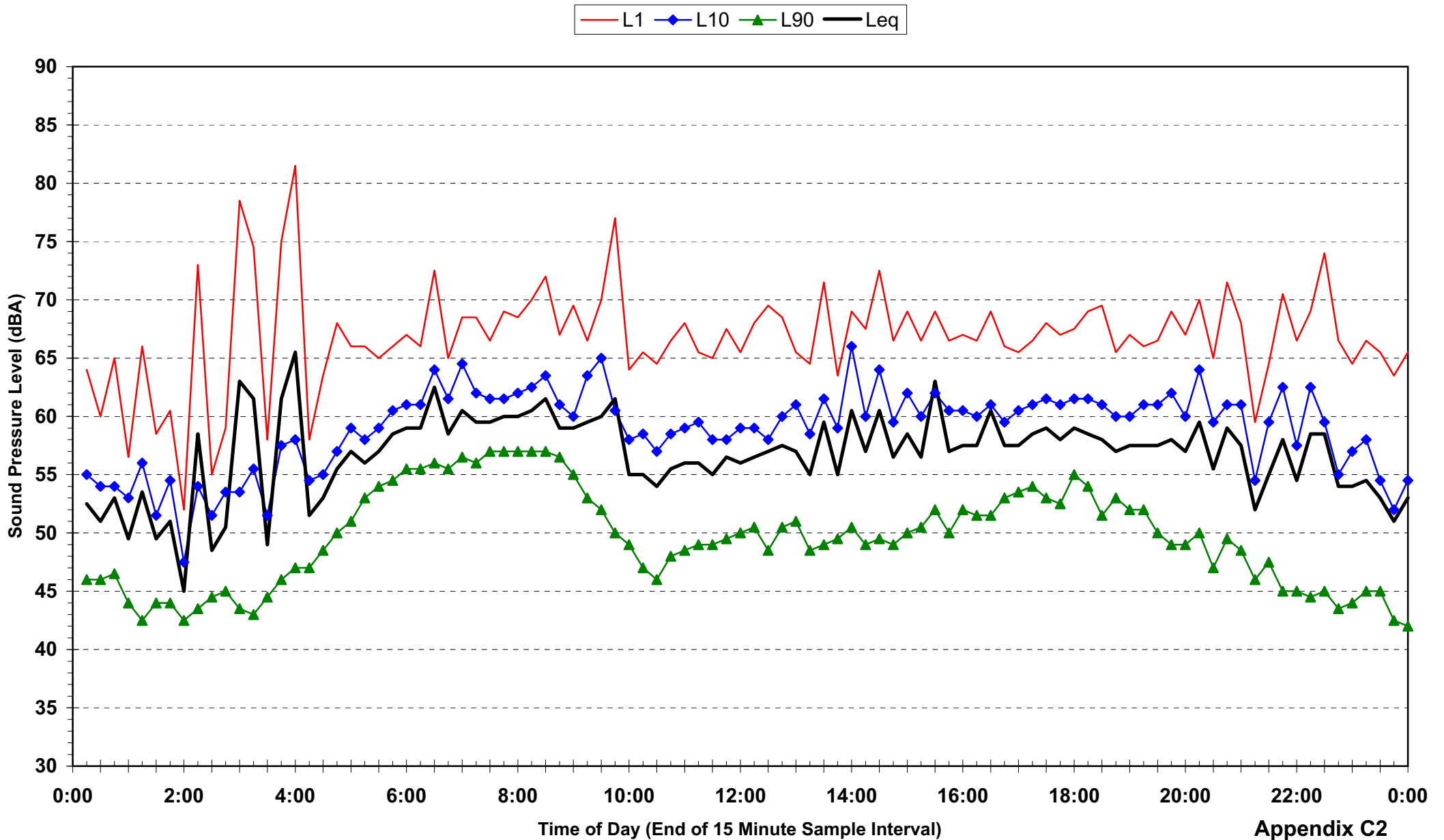
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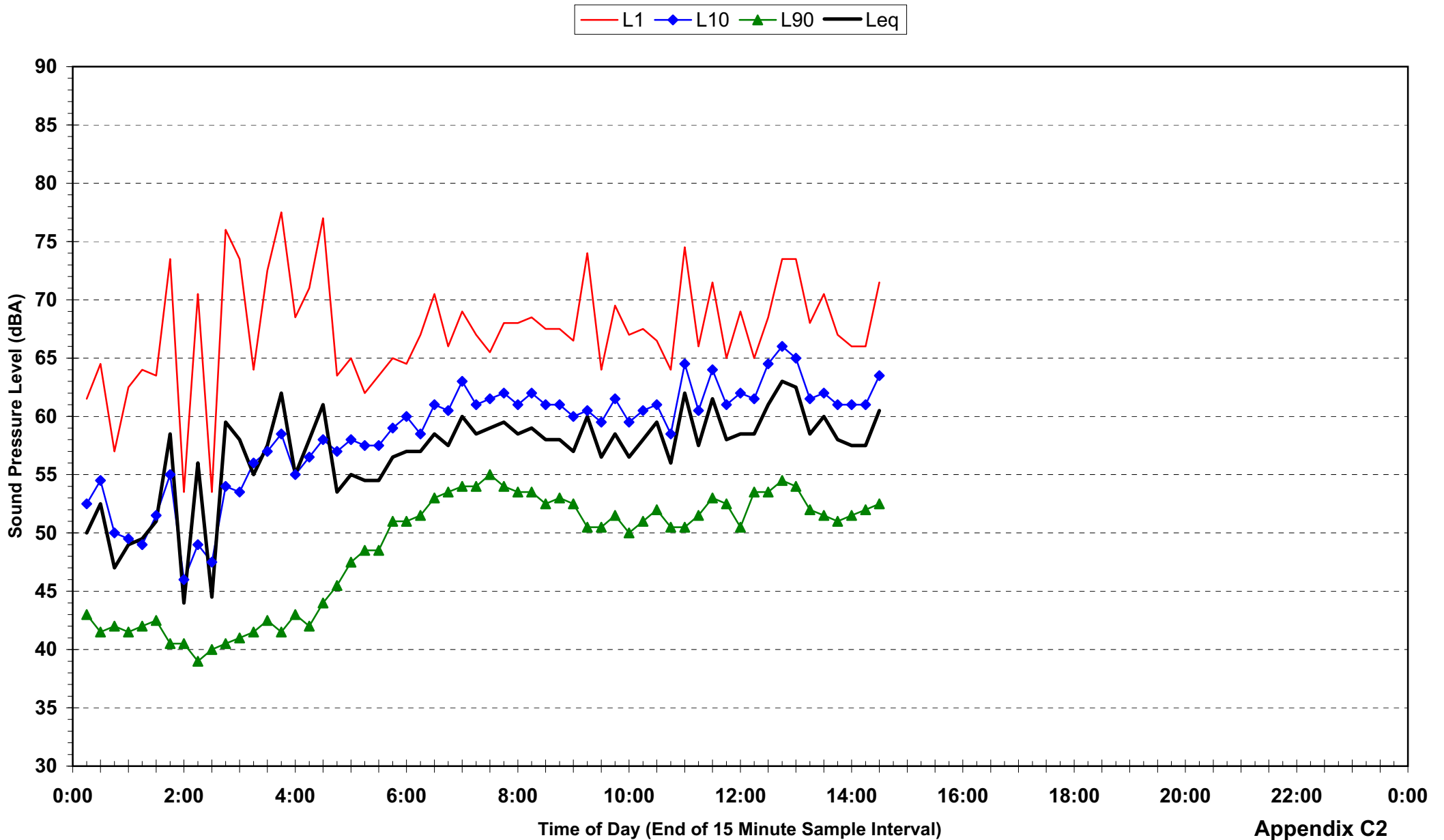
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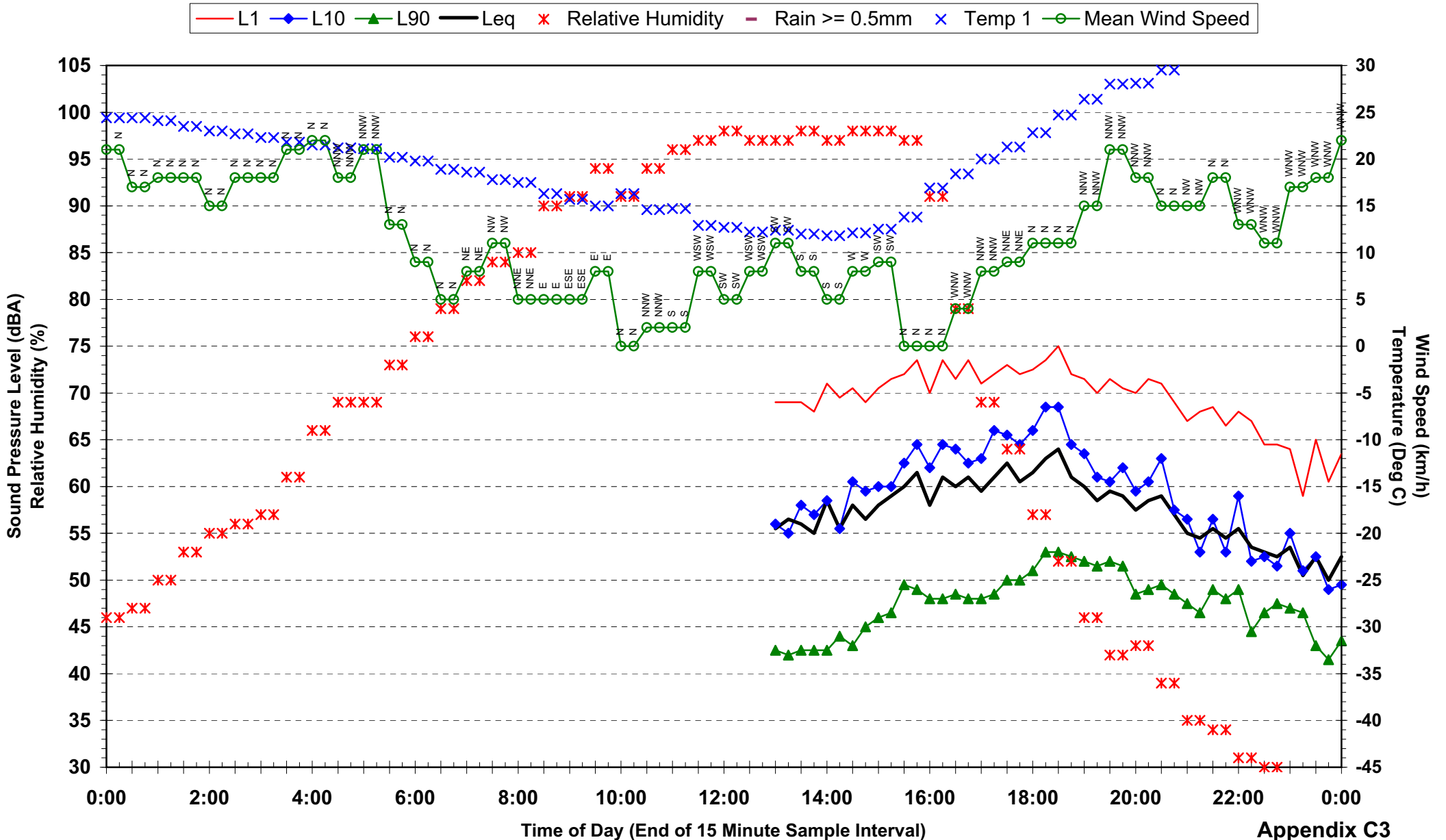
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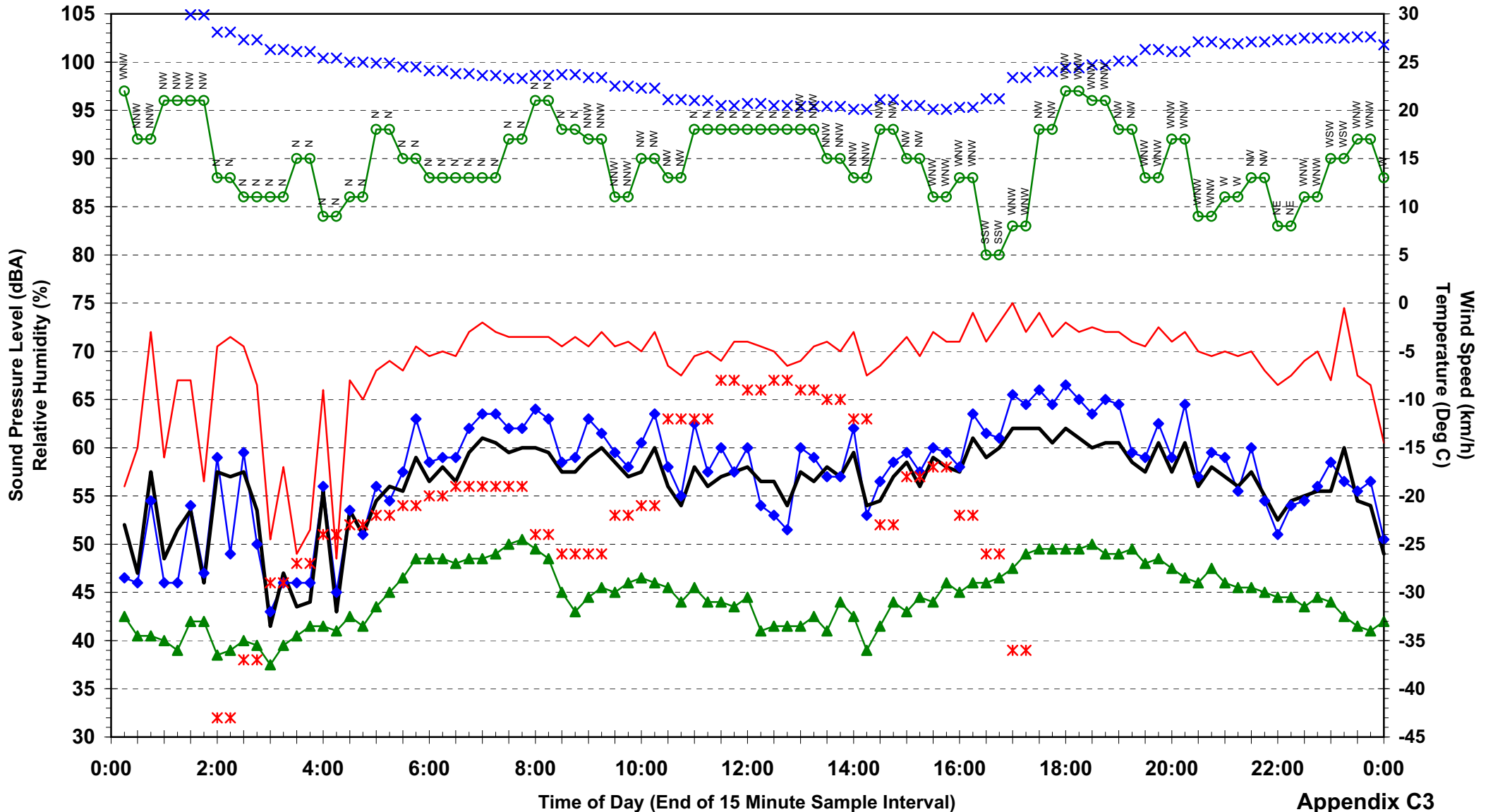
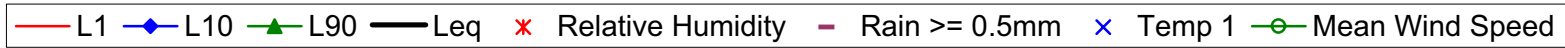
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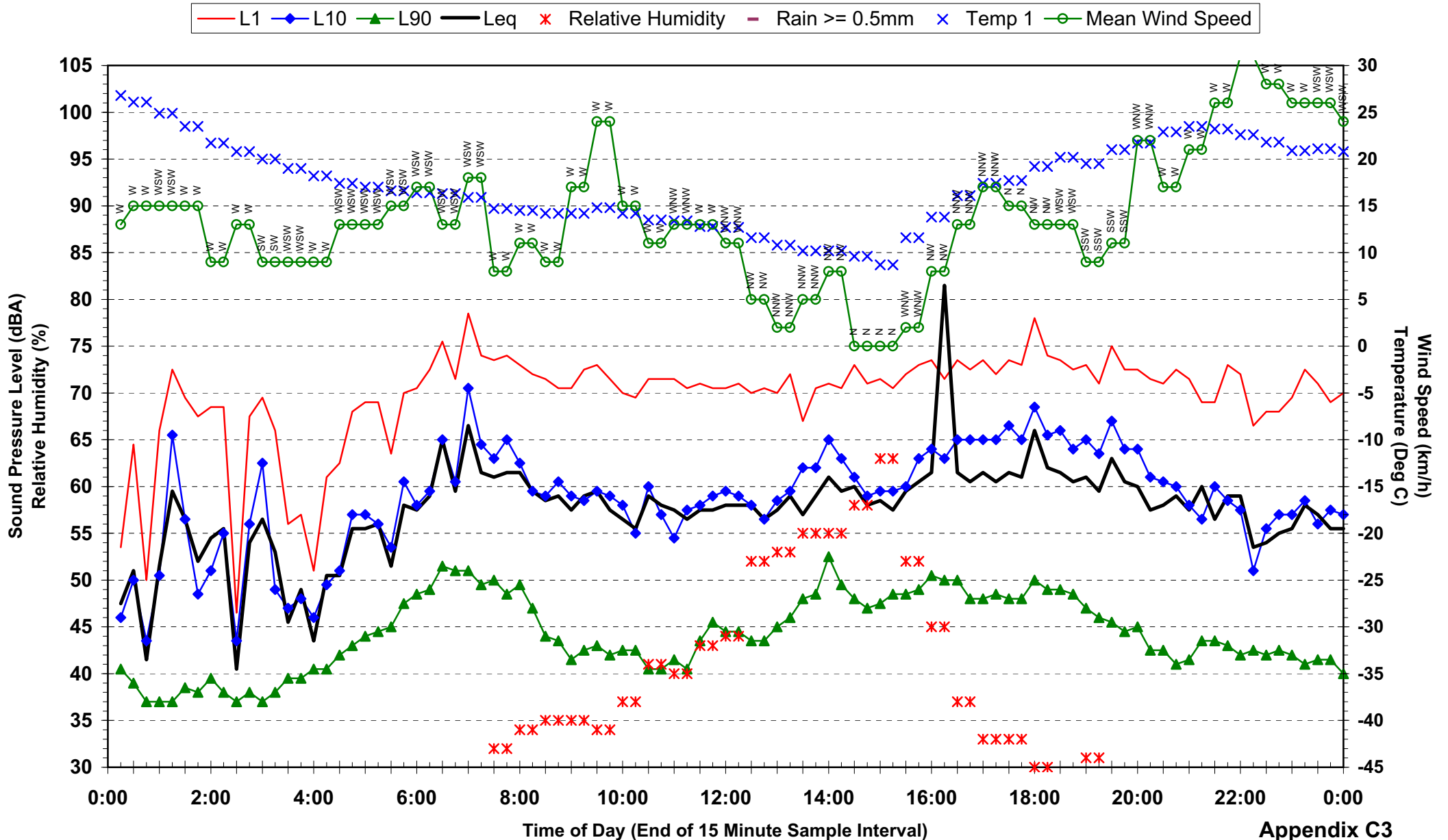
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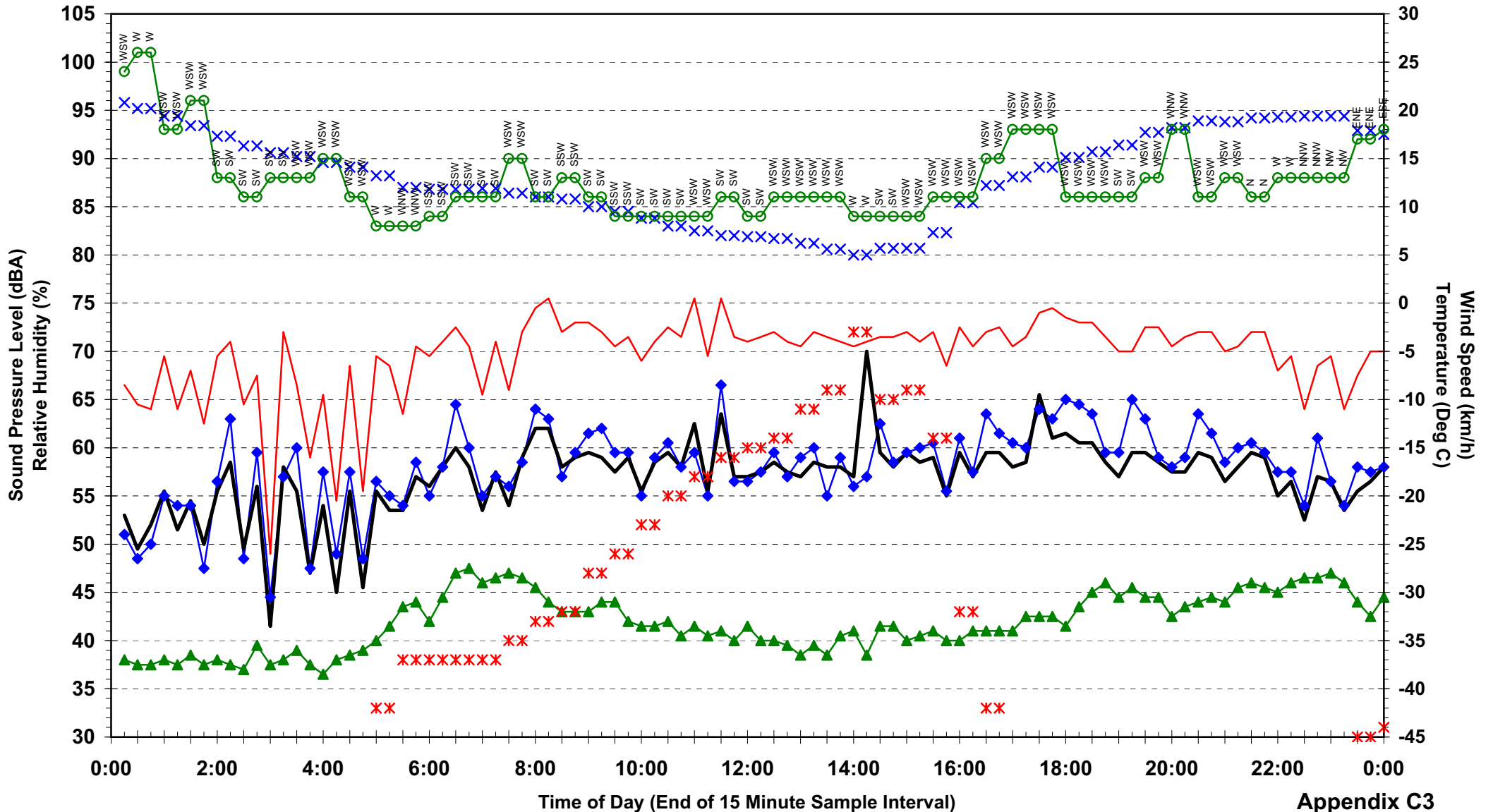
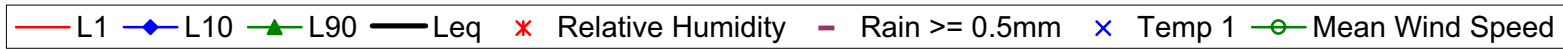


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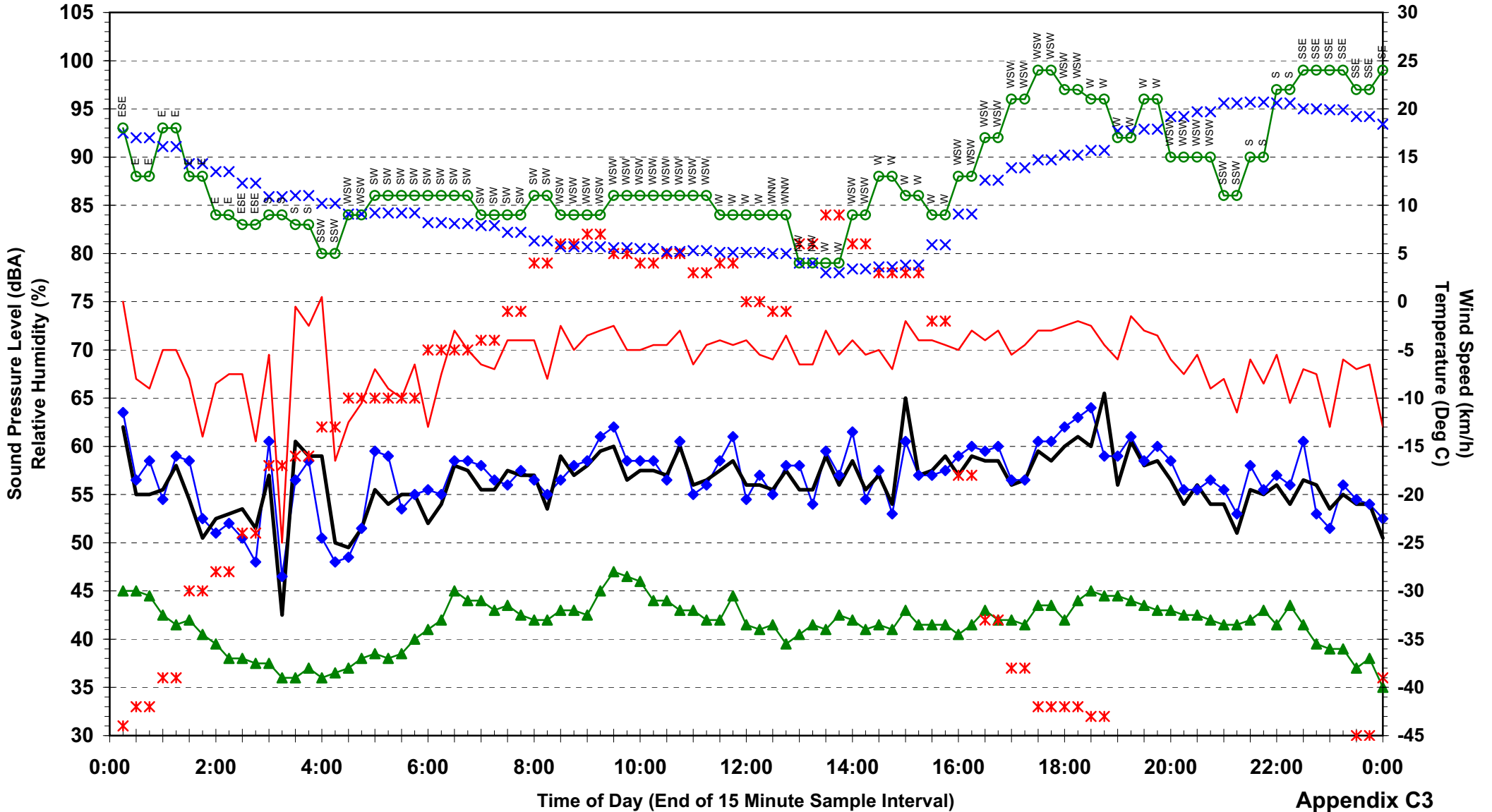
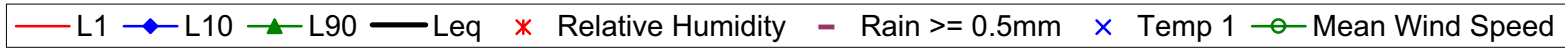
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18 Newtown Rd Glenfield - Saturday 22 April 2006



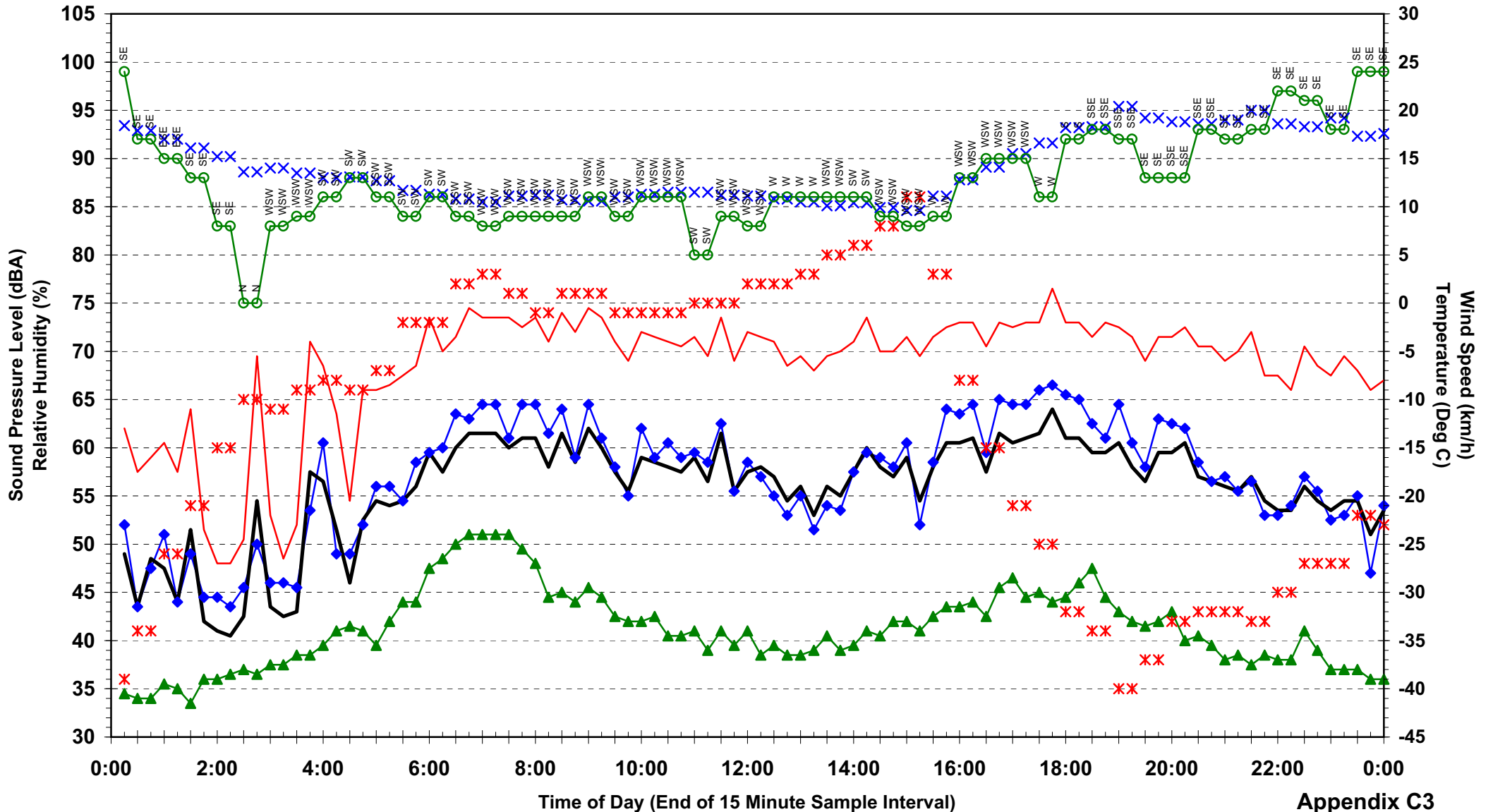
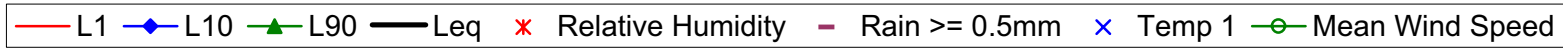
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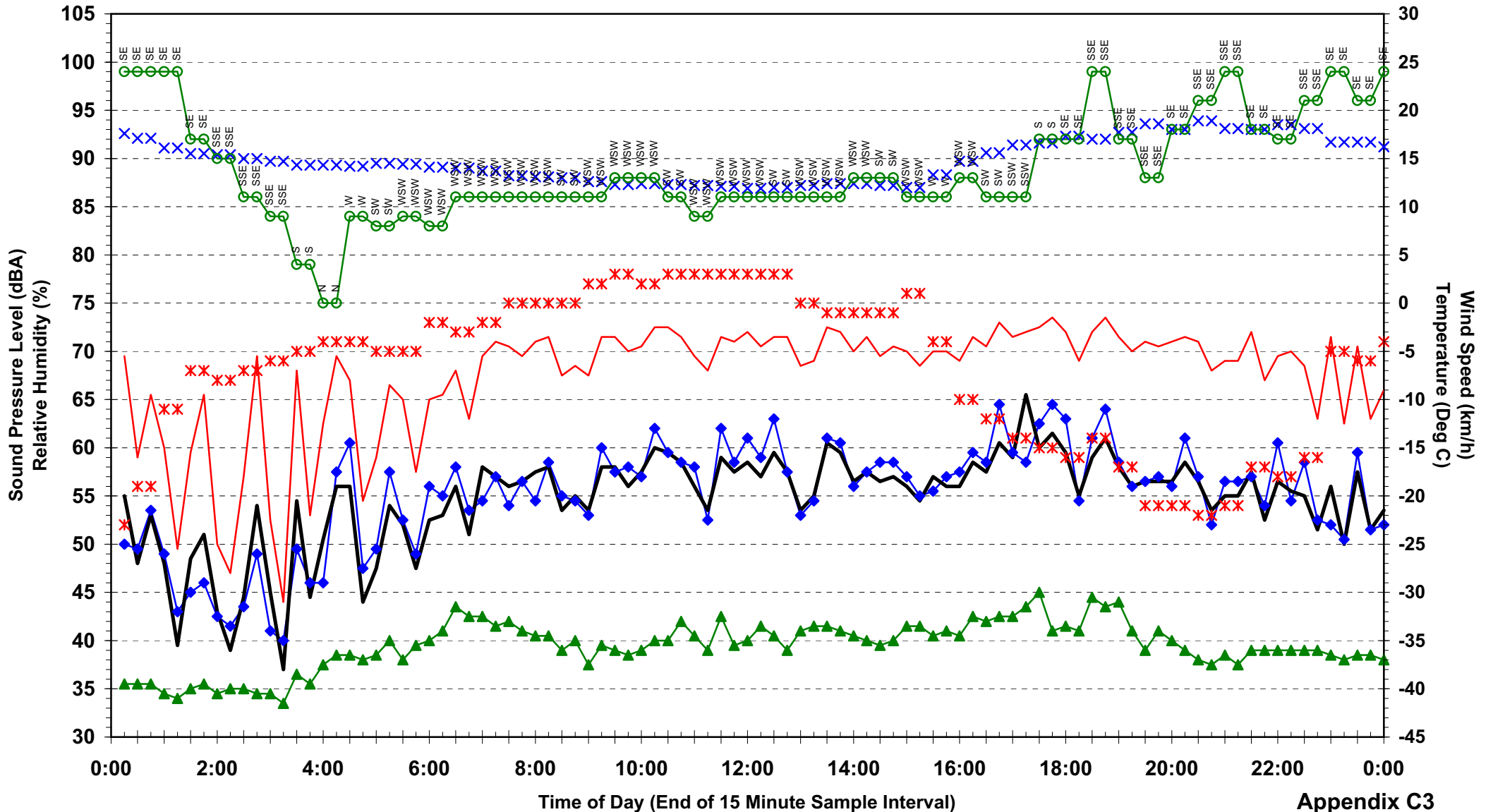
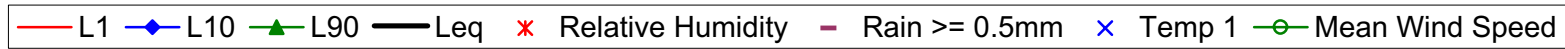
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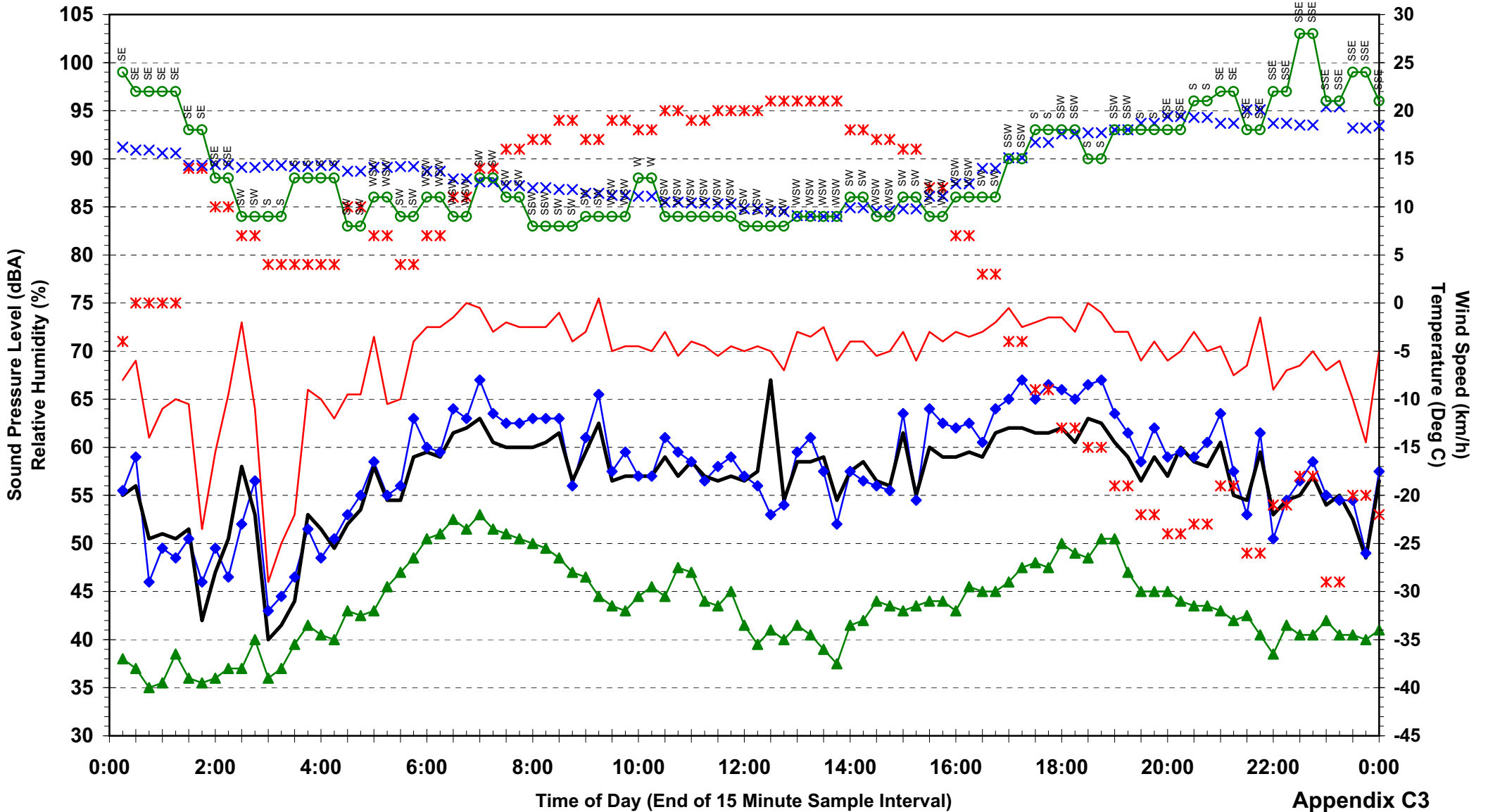
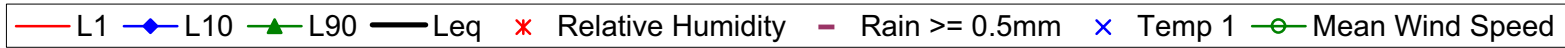
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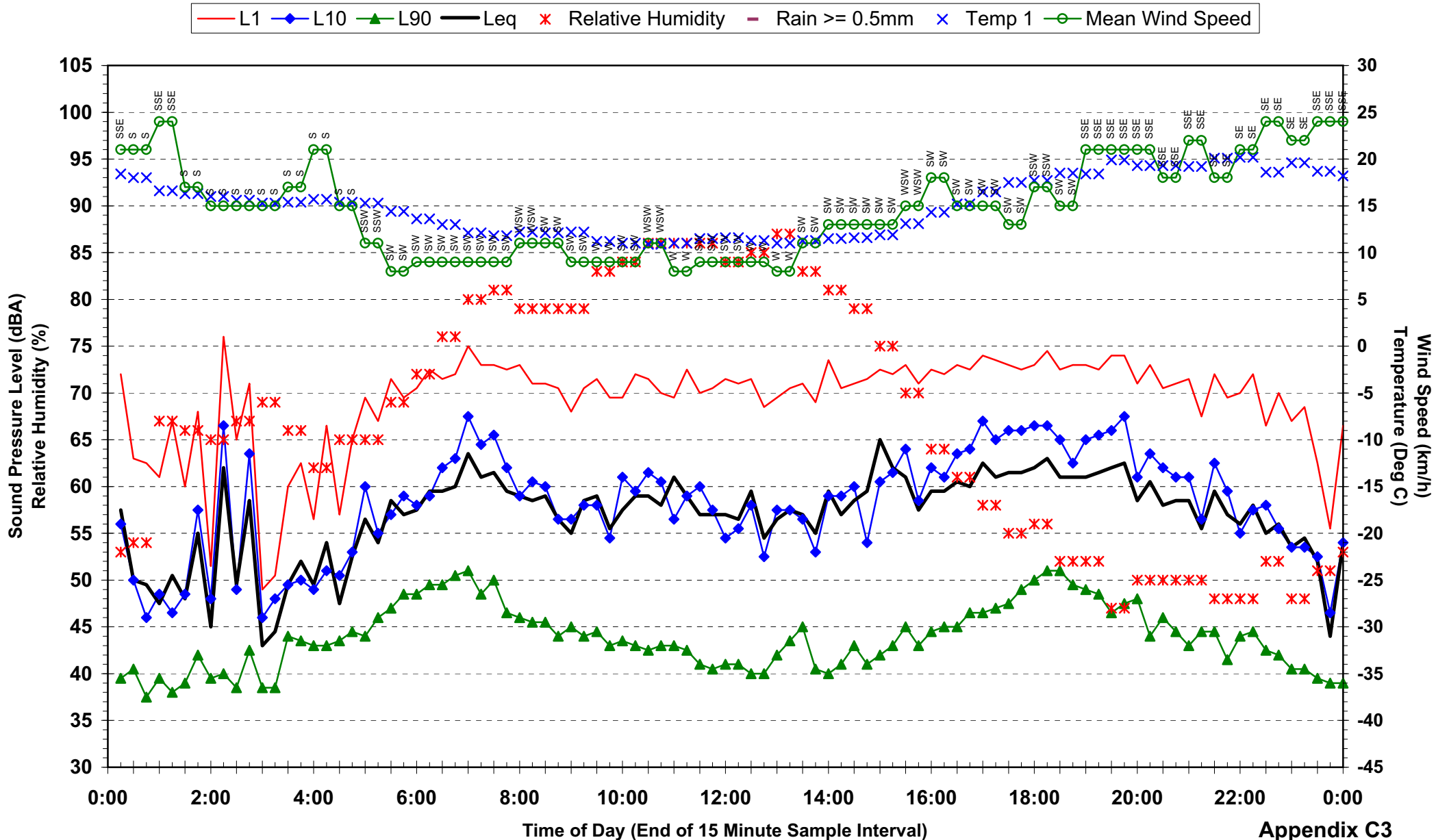


Statistical Ambient Noise Levels

18 Newtown Rd Glenfield - Wednesday 26 April 2006

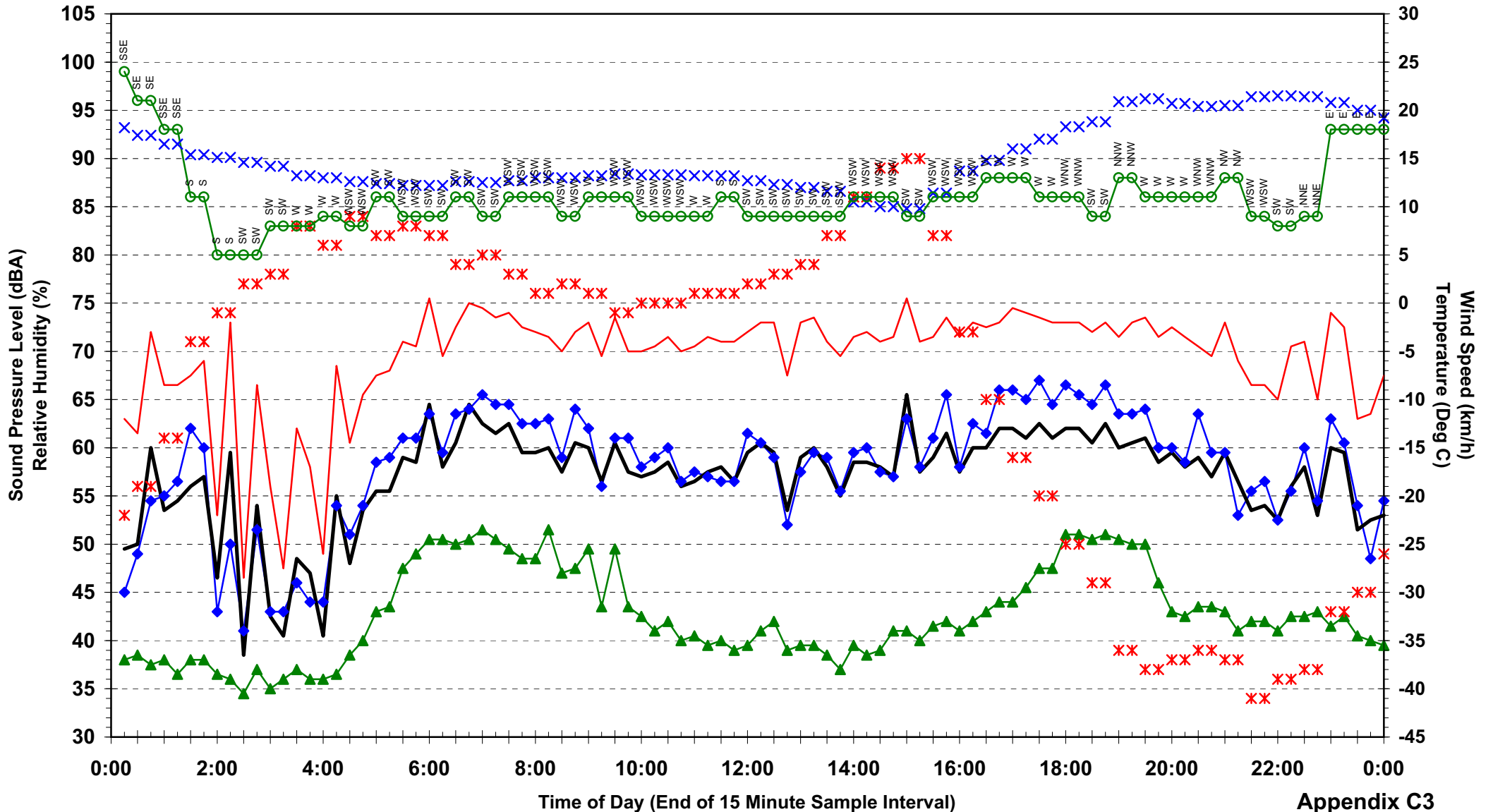
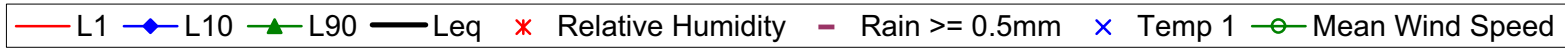


Statistical Ambient Noise Levels 18 Newtown Rd Glenfield - Thursday 27 April 2006



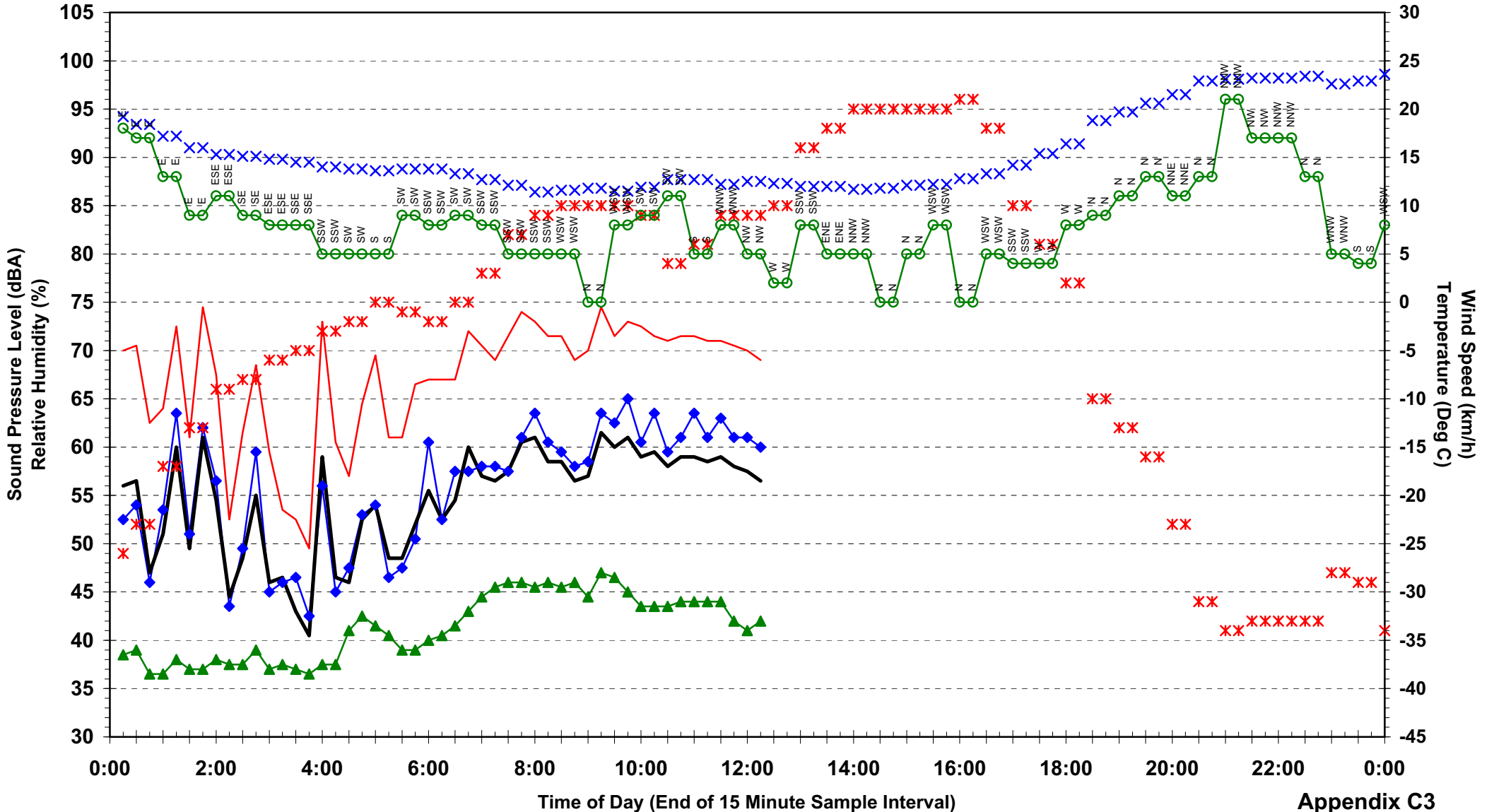
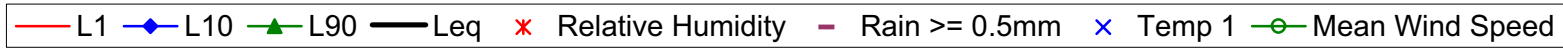
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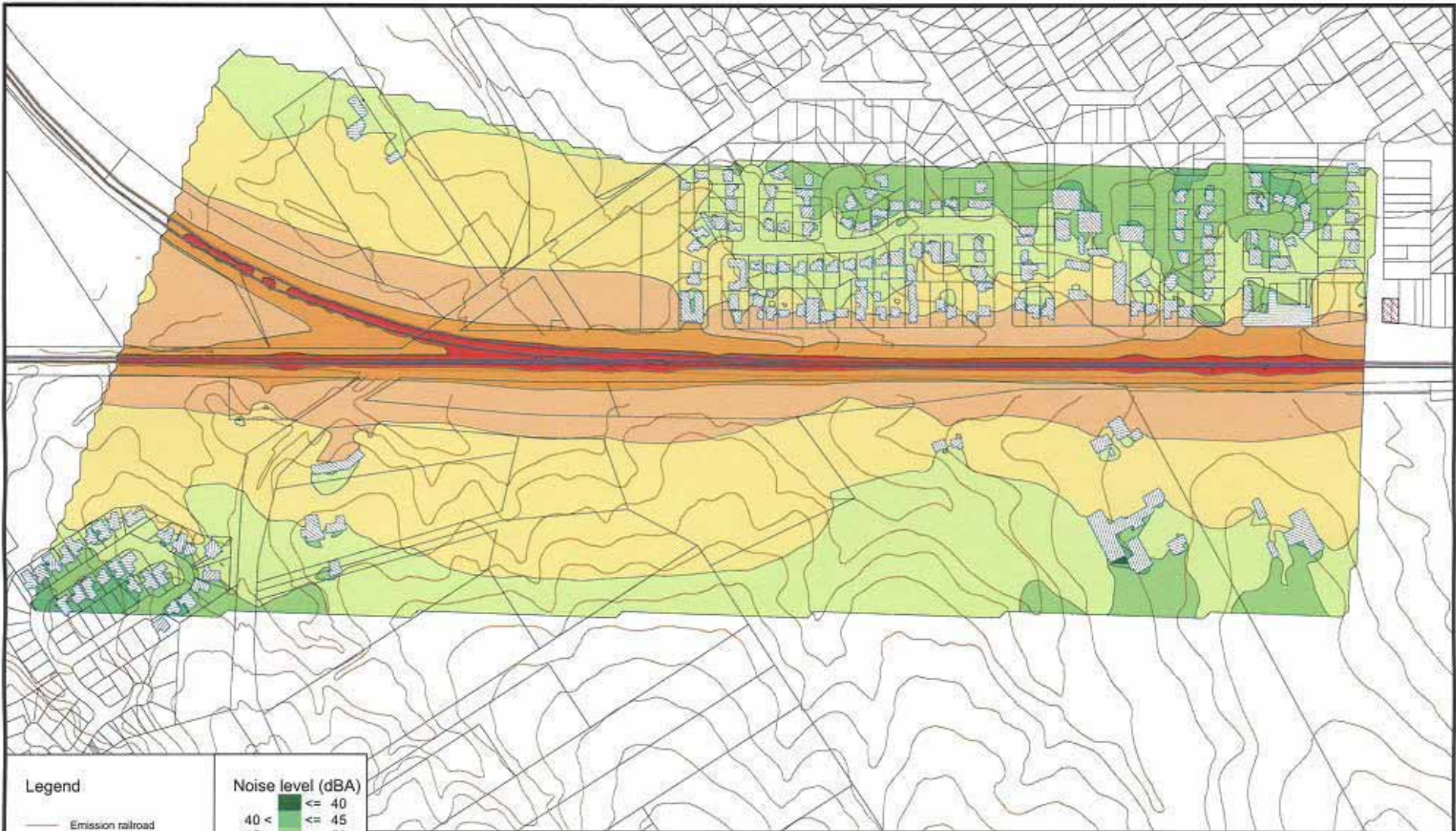
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Statistical Ambient Noise Levels

18 Newtown Rd Glenfield - Saturday 29 April 2006

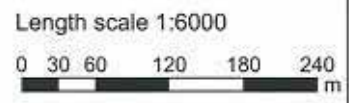
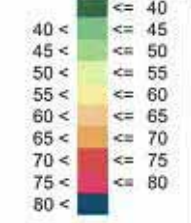




Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

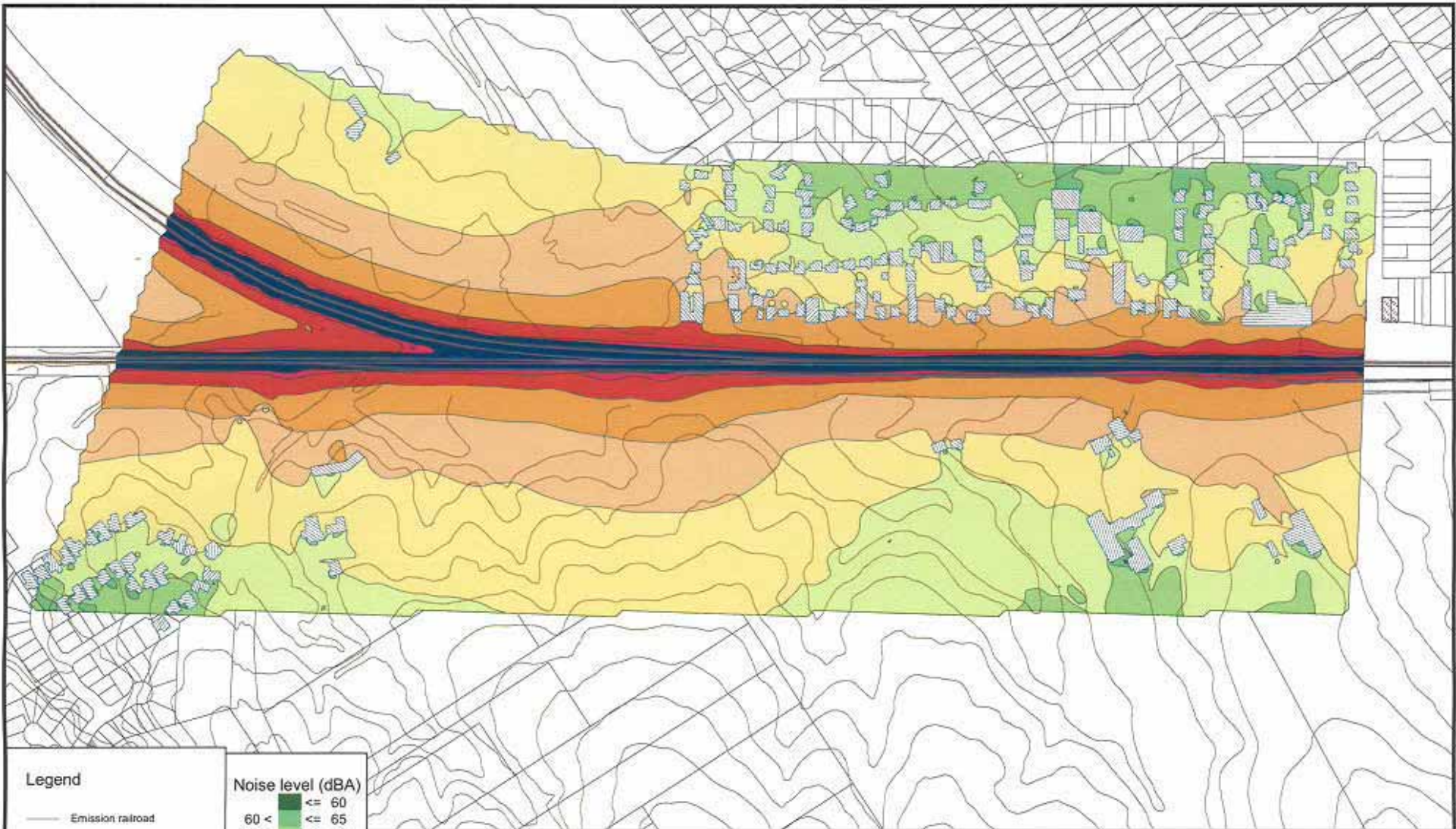
Noise level (dBA)








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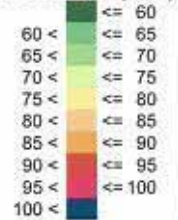
Appendix D - Page 1
10-5184R1 Glenfield North Junction
Existing Situation (Year 2007) - Passenger
LAeq(9hour) - 2.0 m Above Ground



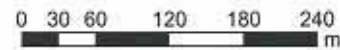
Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



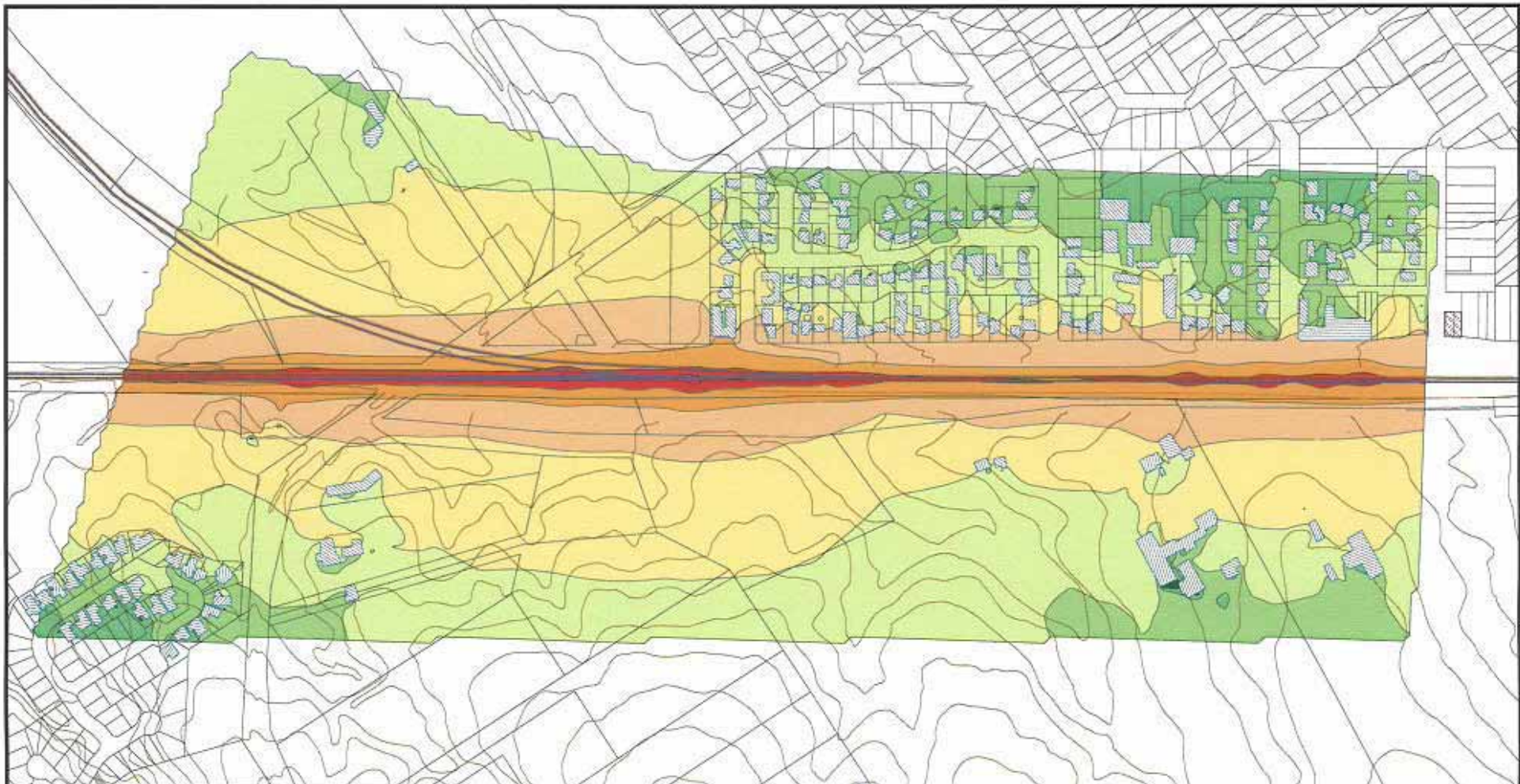
Length scale 1:6000










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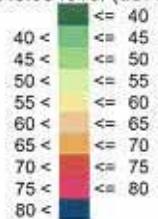
Appendix D - Page 2
10-5184R1 Glenfield North Junction
Existing Situation (Year 2007) - Passenger
LAm_{ax} - 2.0 m Above Ground



Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



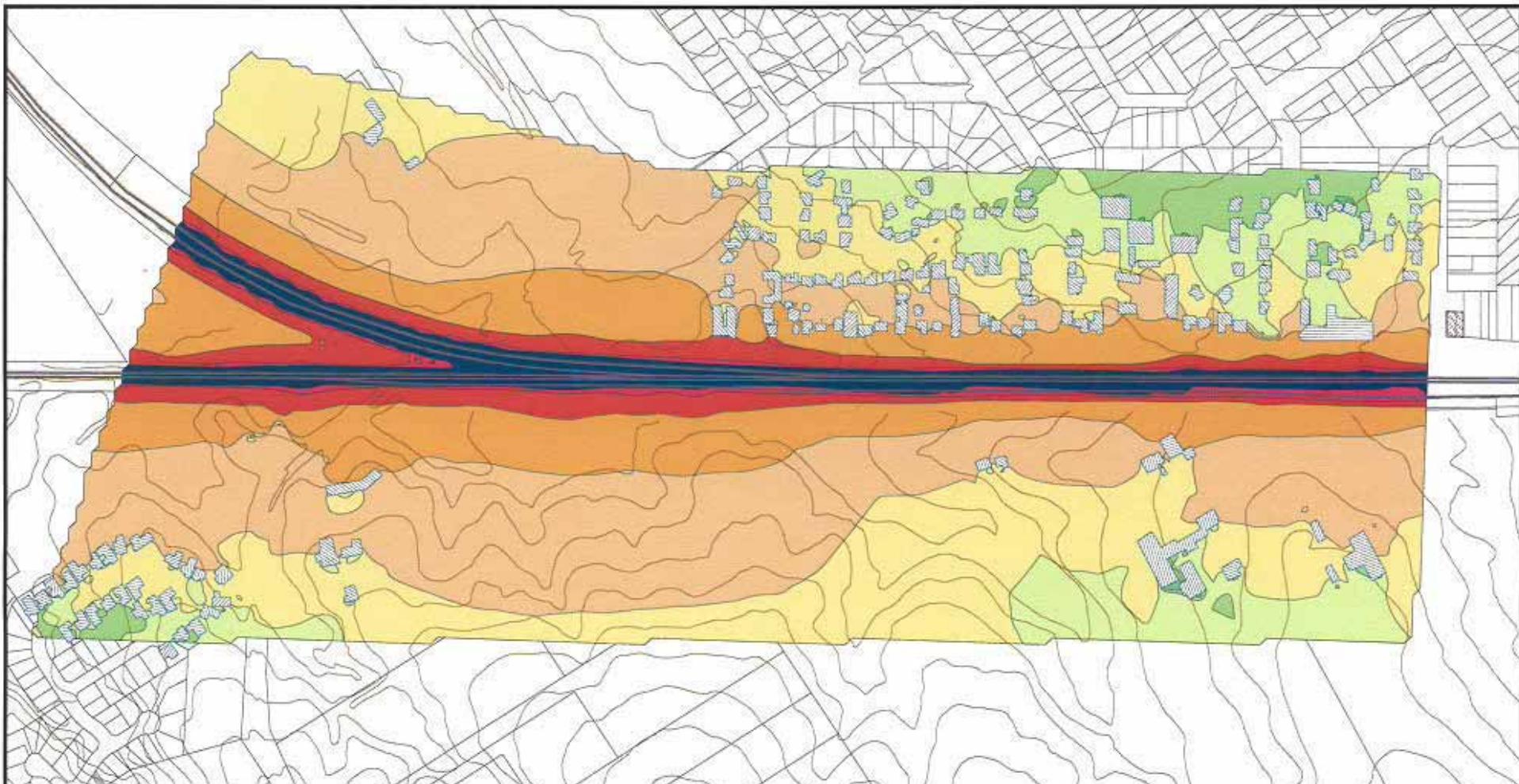
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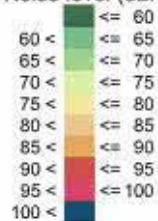
Appendix D - Page 3
10-5184R1 Glenfield North Junction
Existing Situation (Year 2007) - Freight
LAeq(9hour) - 2.0 m Above Ground



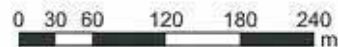
Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



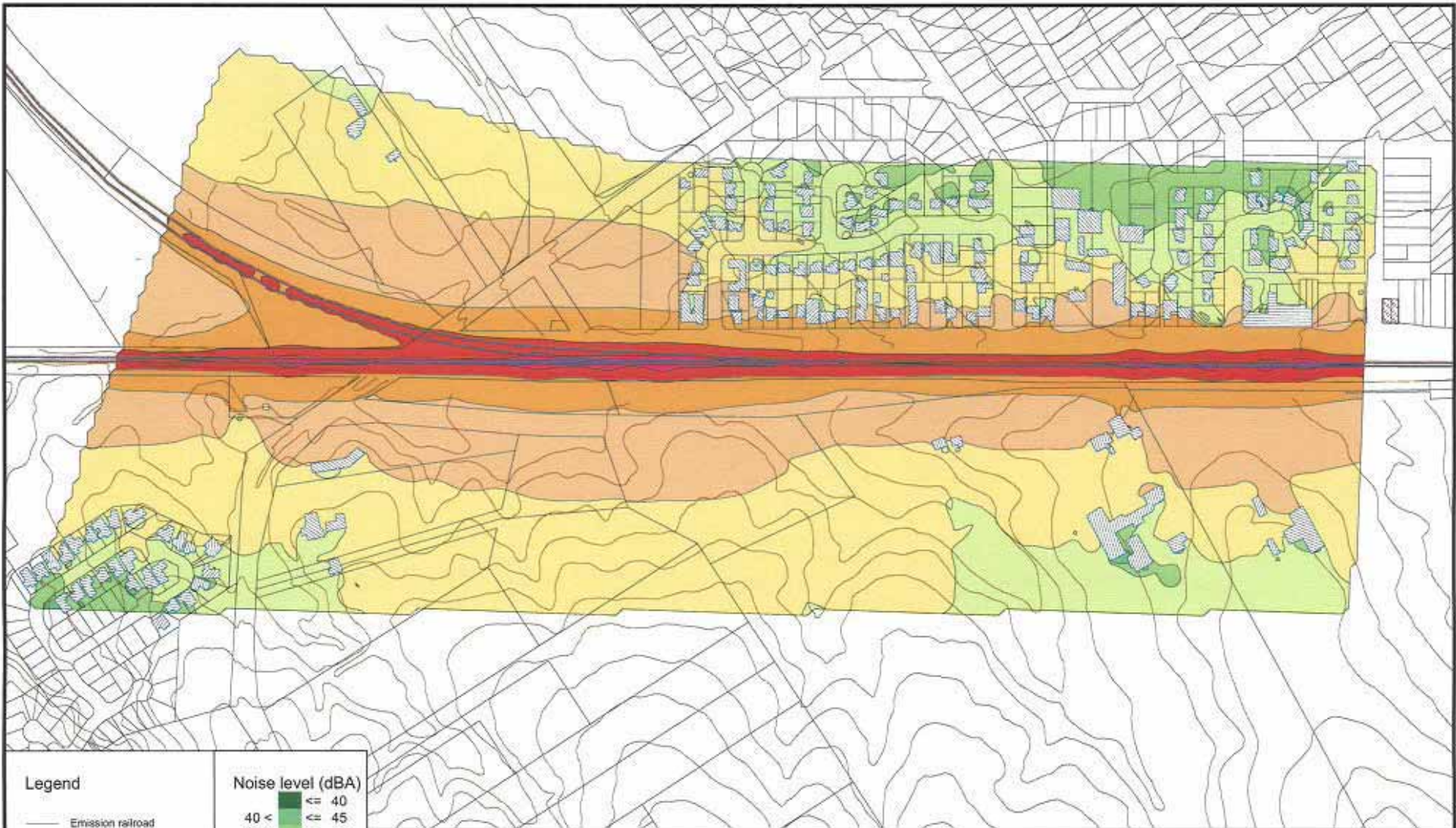
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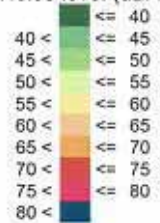
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10-5184R1 Glenfield North Junction
Existing Situation (Year 2007) - Freight
LAm_{ax} - 2.0 m Above Ground



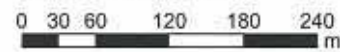
Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

Noise level (dBA)



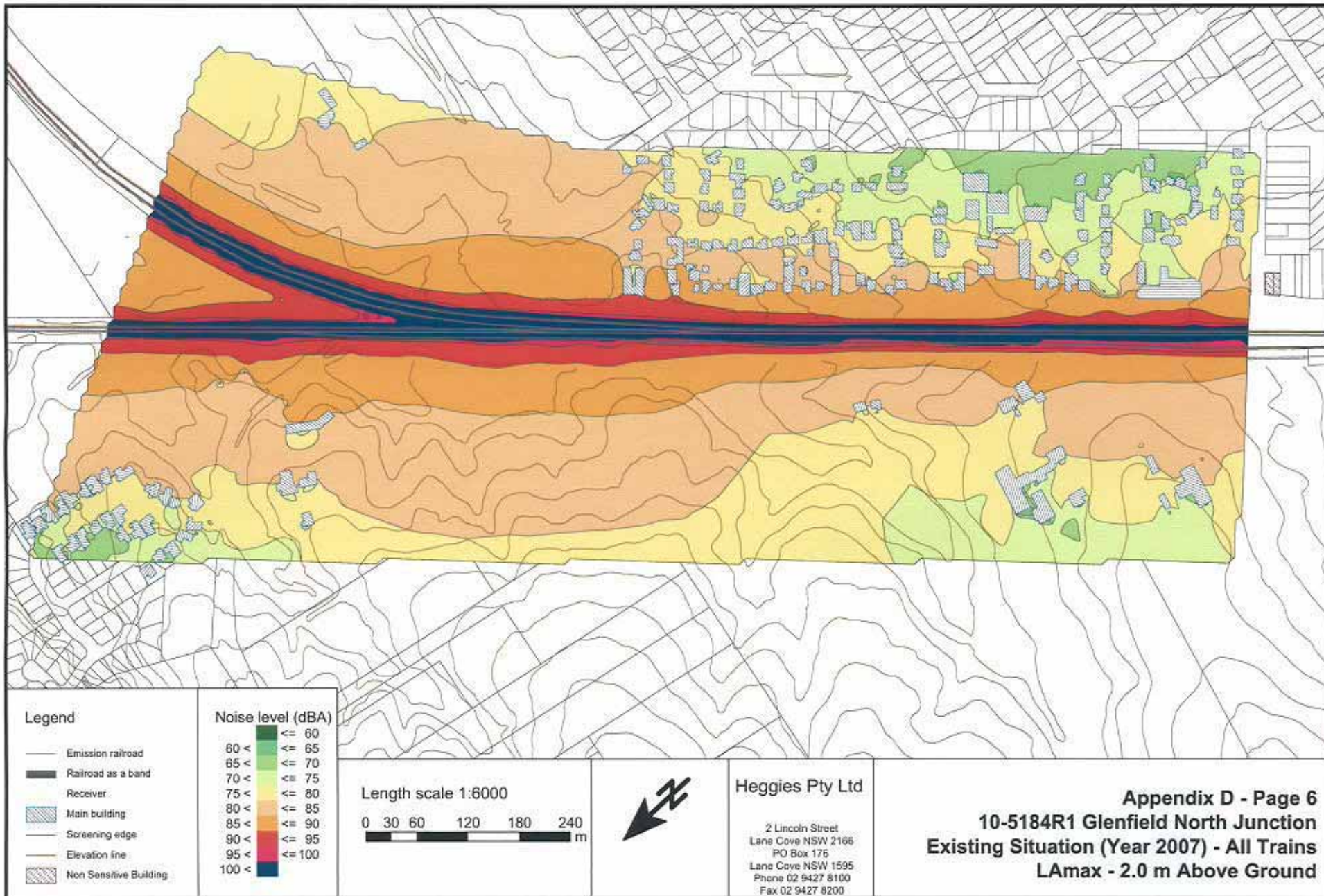
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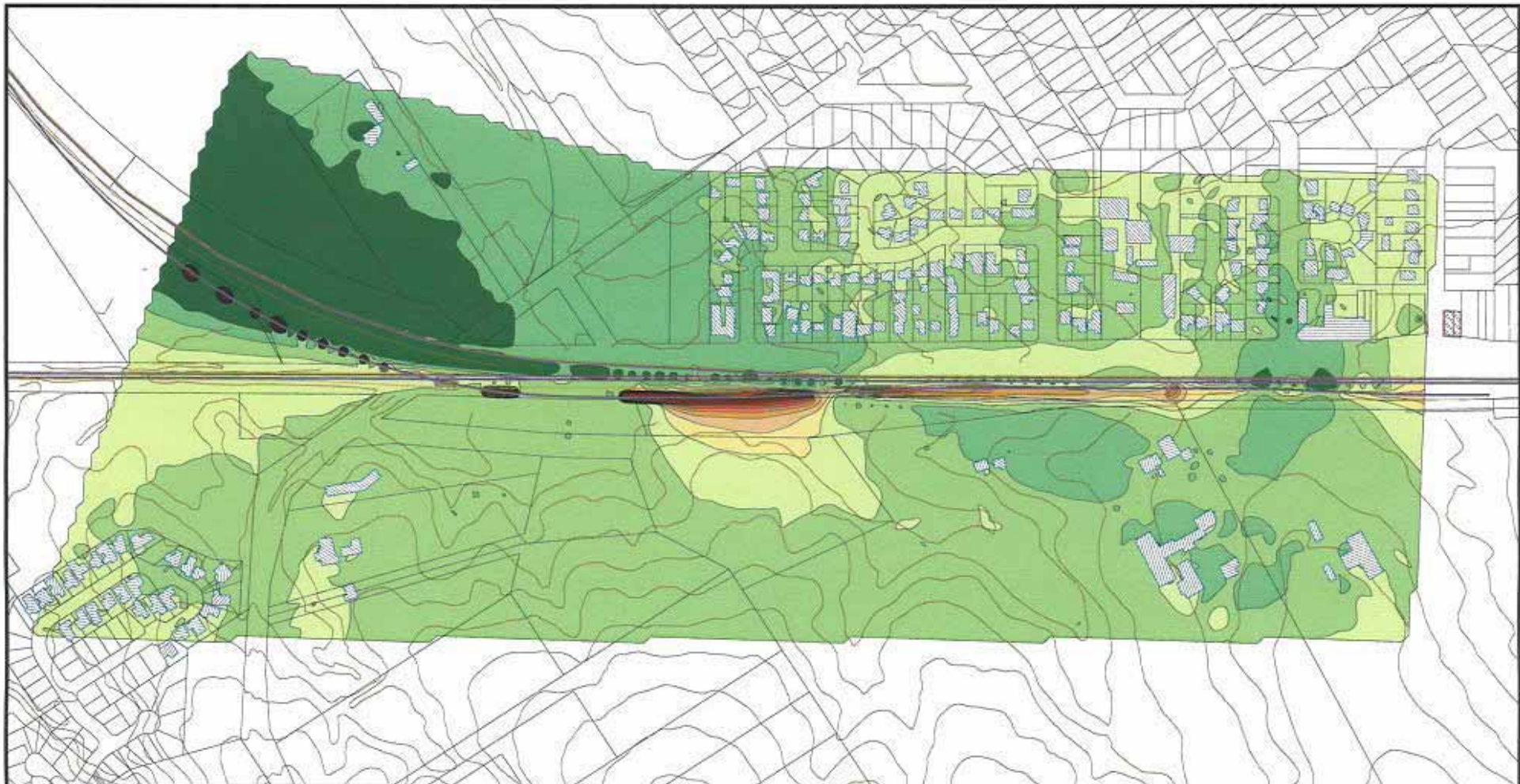


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 Fax 02 9427 8200

Appendix D - Page 5
10-5184R1 Glenfield North Junction
Existing Situation (Year 2007) - All Trains
LAeq(9hour) - 2.0 m Above Ground

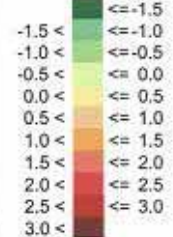




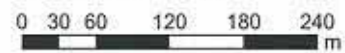
Legend

- Emission railroad
- █ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

Noise level (dBA)



Length scale 1:6000



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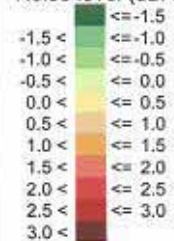
Appendix E - Page 1
10-5184R1 Glenfield North Junction
Change Year 2011 - Year 2007 - Passenger
LAeq(9hour) - 2.0 m Above Ground



Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

Noise level (dBA)



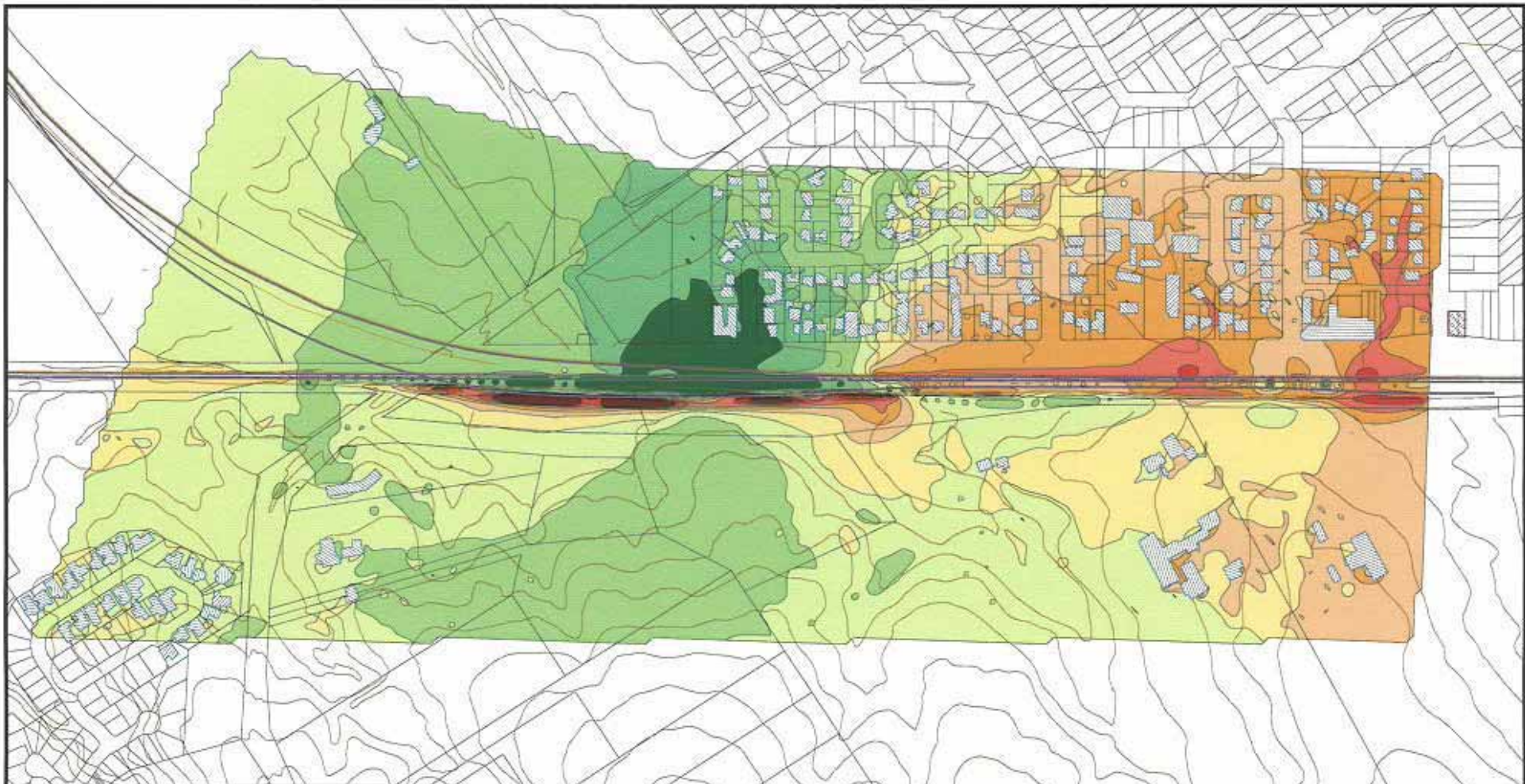
Length scale 1:6000







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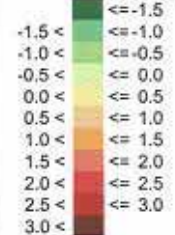
Appendix E - Page 2
10-5184R1 Glenfield North Junction
Change Year 2011 - Year 2007 - Passenger
LAm_{ax} - 2.0 m Above Ground



Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



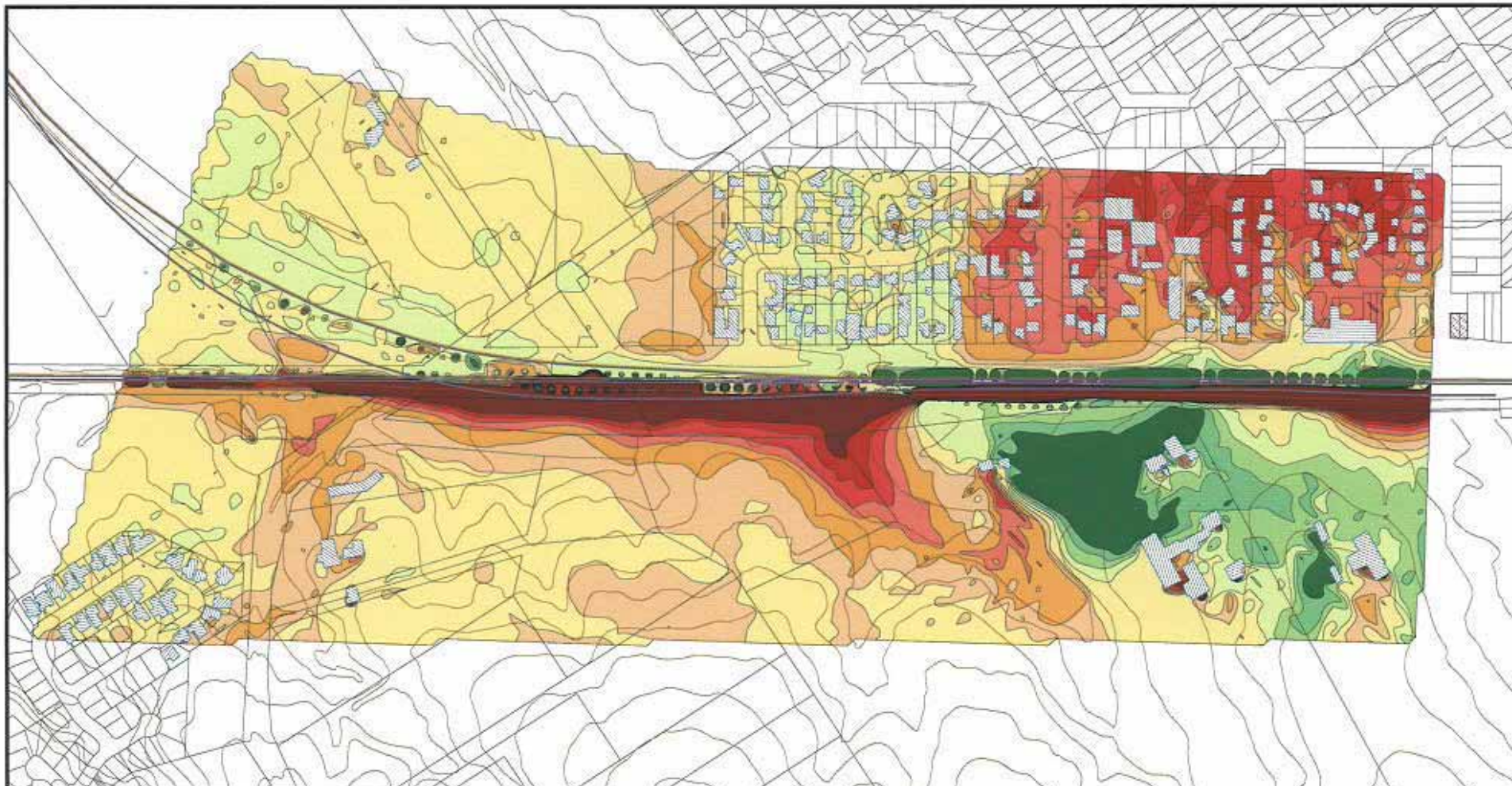
Length scale 1:6000










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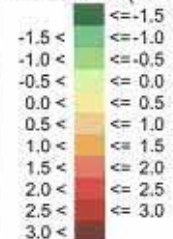
Appendix E - Page 3
10-5184R1 Glenfield North Junction
Change Year 2011 - Year 2007 - Freight
LAeq(9hour) - 2.0 m Above Ground



Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



Length scale 1:6000










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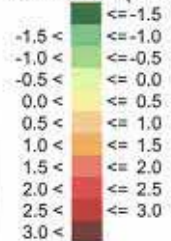
Appendix E - Page 4
10-5184R1 Glenfield North Junction
Change Year 2011 - Year 2007 - Freight
L_{Amax} - 2.0 m Above Ground



Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



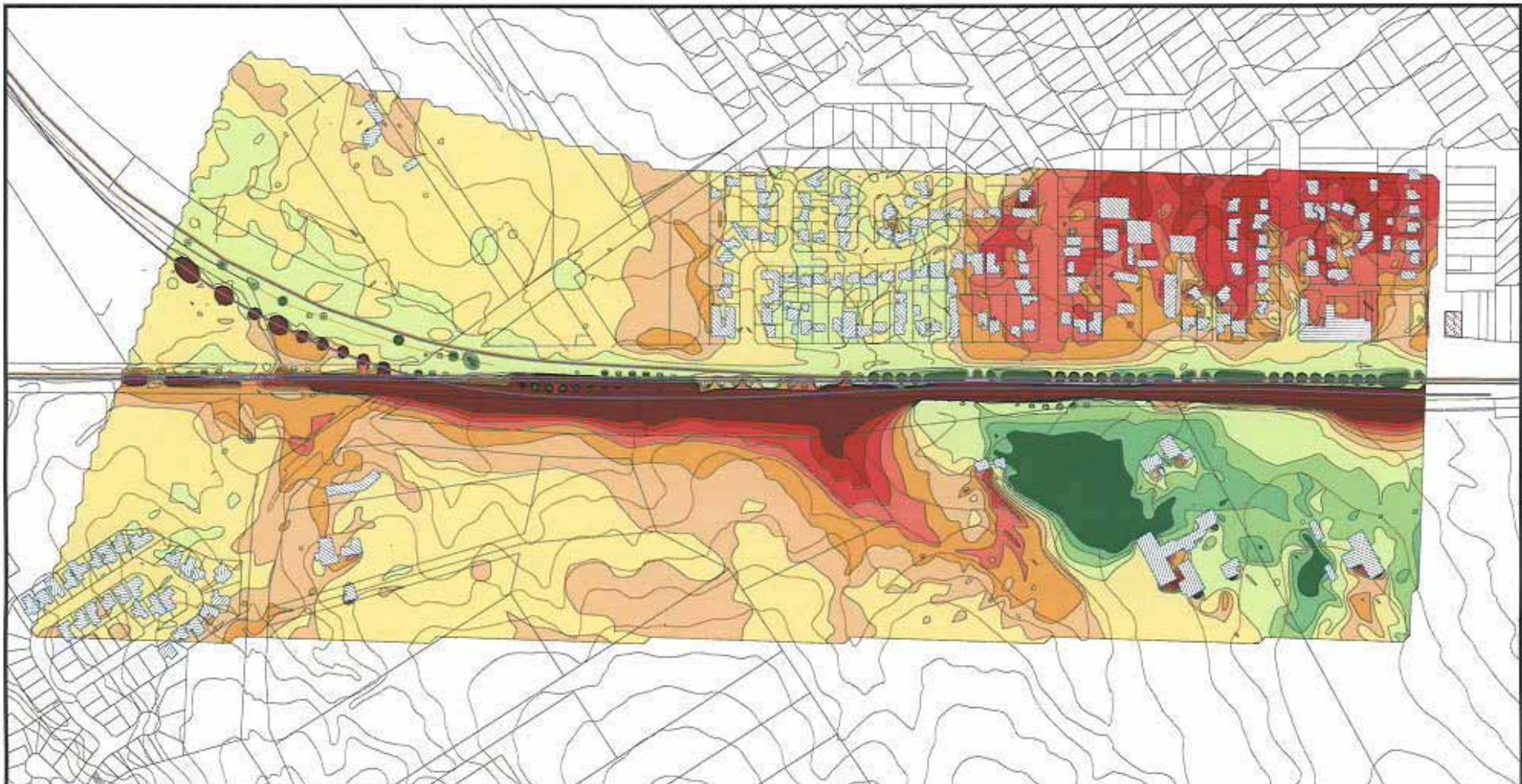
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Heggies Pty Ltd

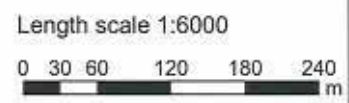
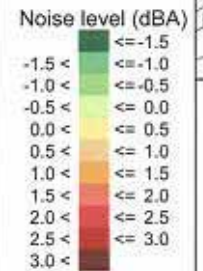
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Appendix E - Page 5
10-5184R1 Glenfield North Junction
Change Year 2011 - Year 2007 - All Trains
L_{Aeq}(9hour) - 2.0 m Above Ground



Legend

- Emission railroad
- █ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building



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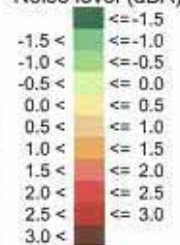
Appendix E - Page 6
10-5184R1 Glenfield North Junction
Change Year 2011 - Year 2007 - All Trains
LAmx - 2.0 m Above Ground



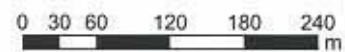
Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

Noise level (dBA)



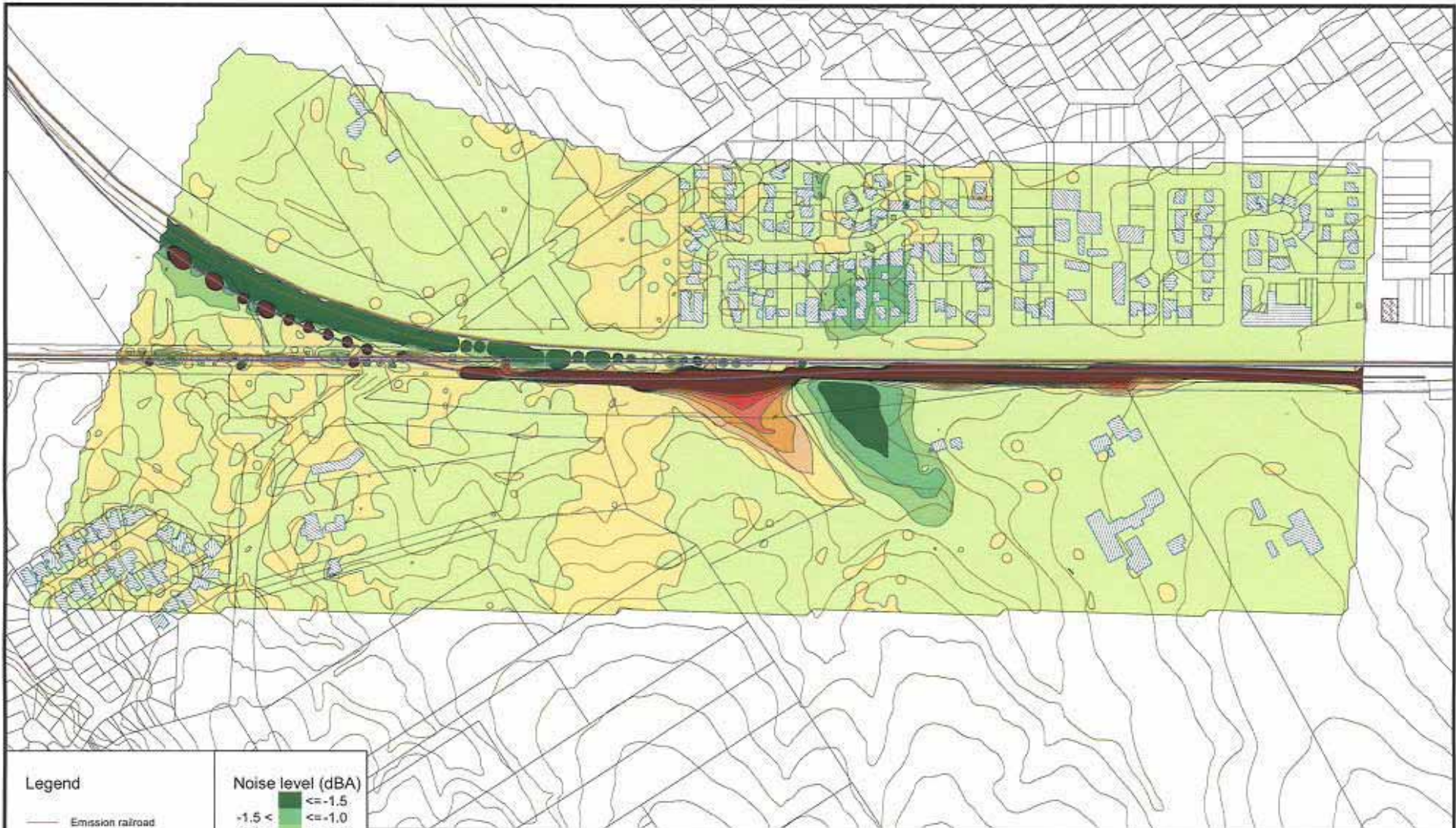
Length scale 1:6000



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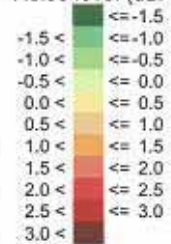
Appendix F - Page 1
10-5184R1 Glenfield North Junction
Change Year 2017 - Year 2007 - Passenger
L_{Aeq}(9hour) - 2.0 m Above Ground



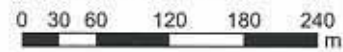
Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

Noise level (dBA)



Length scale 1:6000










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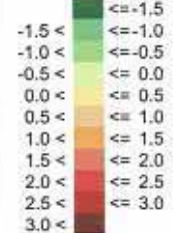
Appendix F - Page 2
10-5184R1 Glenfield North Junction
Change Year 2017 - Year 2007 - Passenger
L_{Amax} - 2.0 m Above Ground



Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



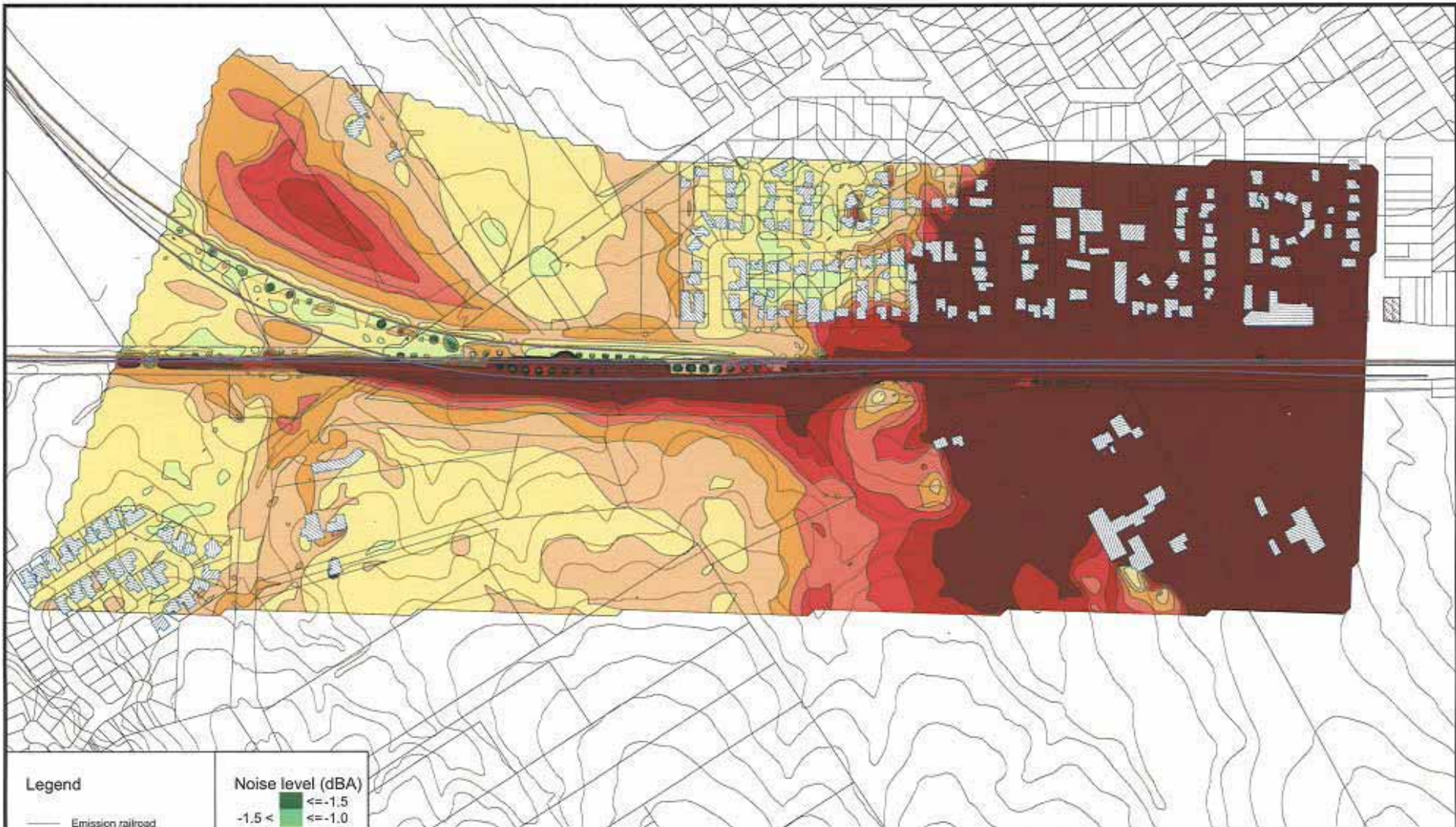
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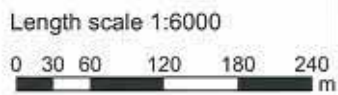
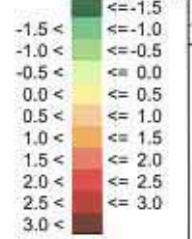
Appendix F - Page 3
10-5184R1 Glenfield North Junction
Change Year 2017 - Year 2007 - Freight
LAeq(9hour) - 2.0 m Above Ground



Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

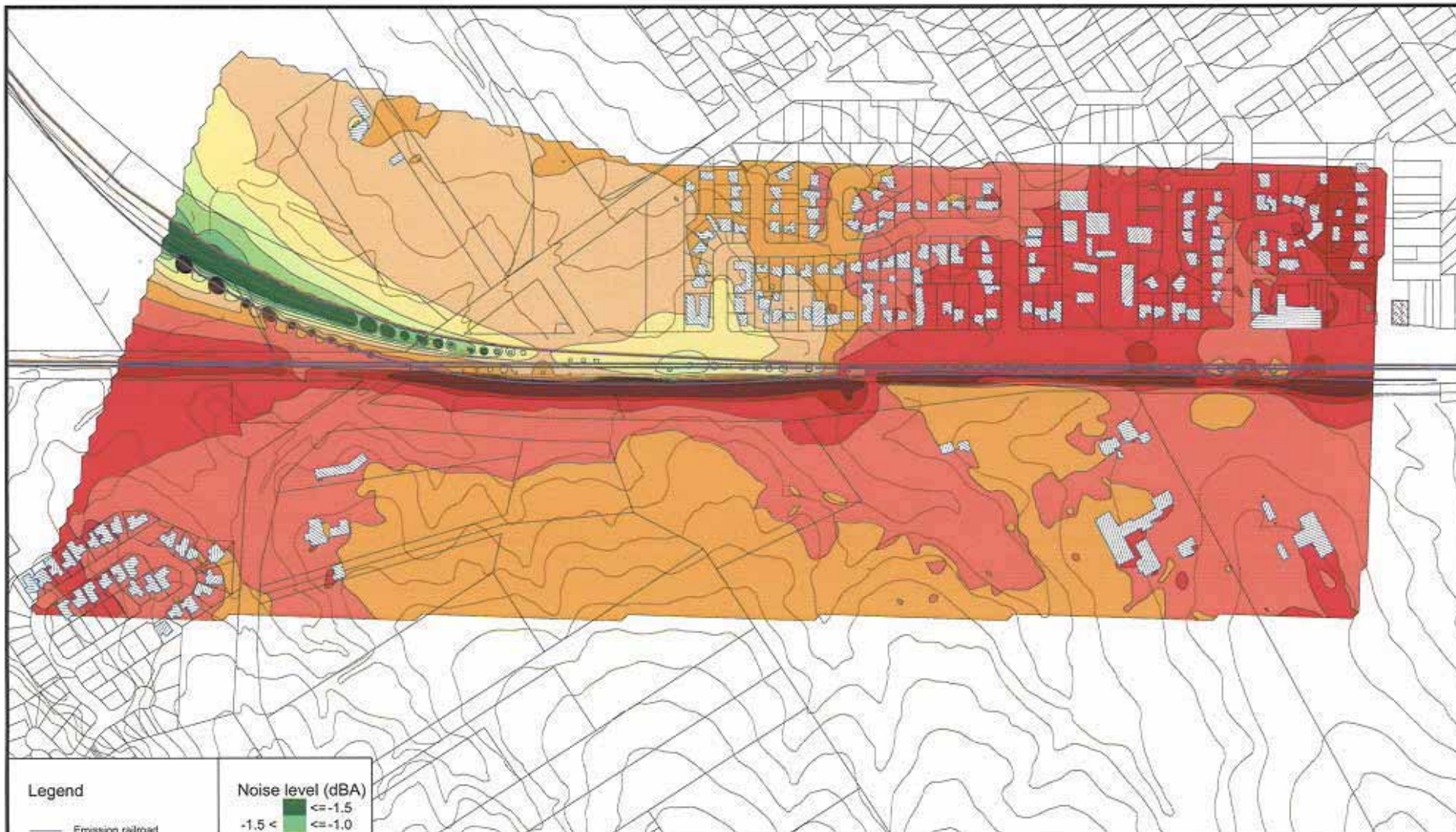
Noise level (dBA)










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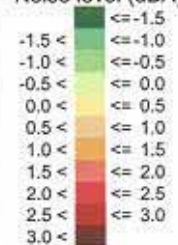
Appendix F - Page 4
10-5184R1 Glenfield North Junction
Change Year 2017 - Year 2007 - Freight
LAm_{ax} - 2.0 m Above Ground



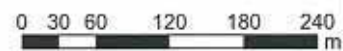
Legend

-  Emission railroad
-  Railroad as a band
-  Receiver
-  Main building
-  Screening edge
-  Elevation line
-  Non Sensitive Building

Noise level (dBA)



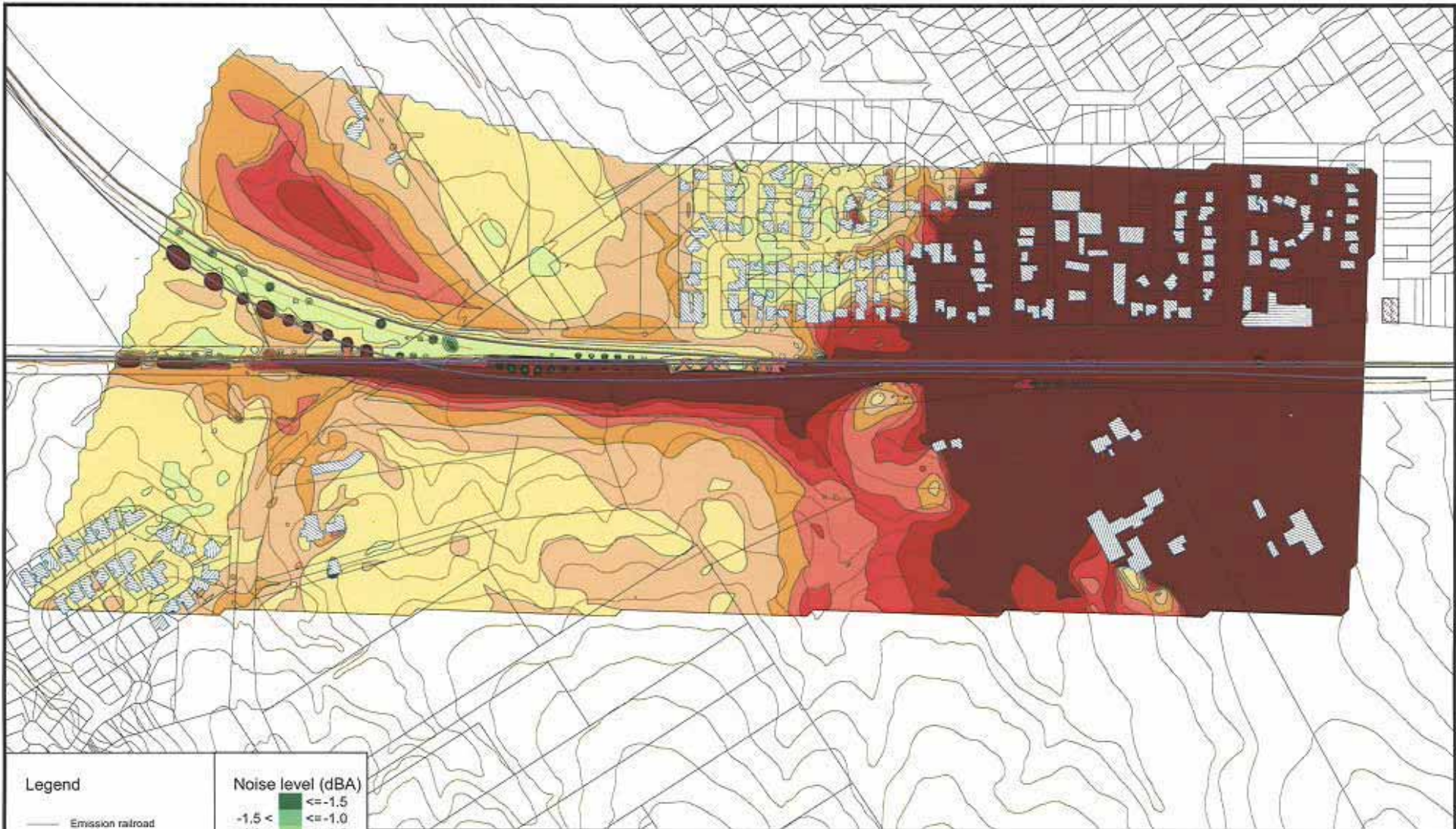
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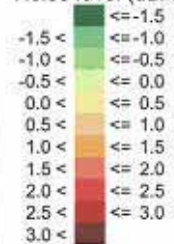
Appendix F - Page 5
10-5184R1 Glenfield North Junction
Change Year 2017 - Year 2007 - All Trains
LAeq(9hour) - 2.0 m Above Ground



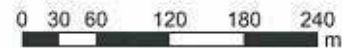
Legend

- Emission railroad
- ▬ Railroad as a band
- Receiver
- ▨ Main building
- Screening edge
- Elevation line
- ▨ Non Sensitive Building

Noise level (dBA)



Length scale 1:6000



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Appendix F - Page 6
10-5184R1 Glenfield North Junction
Change Year 2017 - Year 2007 - All Trains
LAm_{ax} - 2.0 m Above Ground



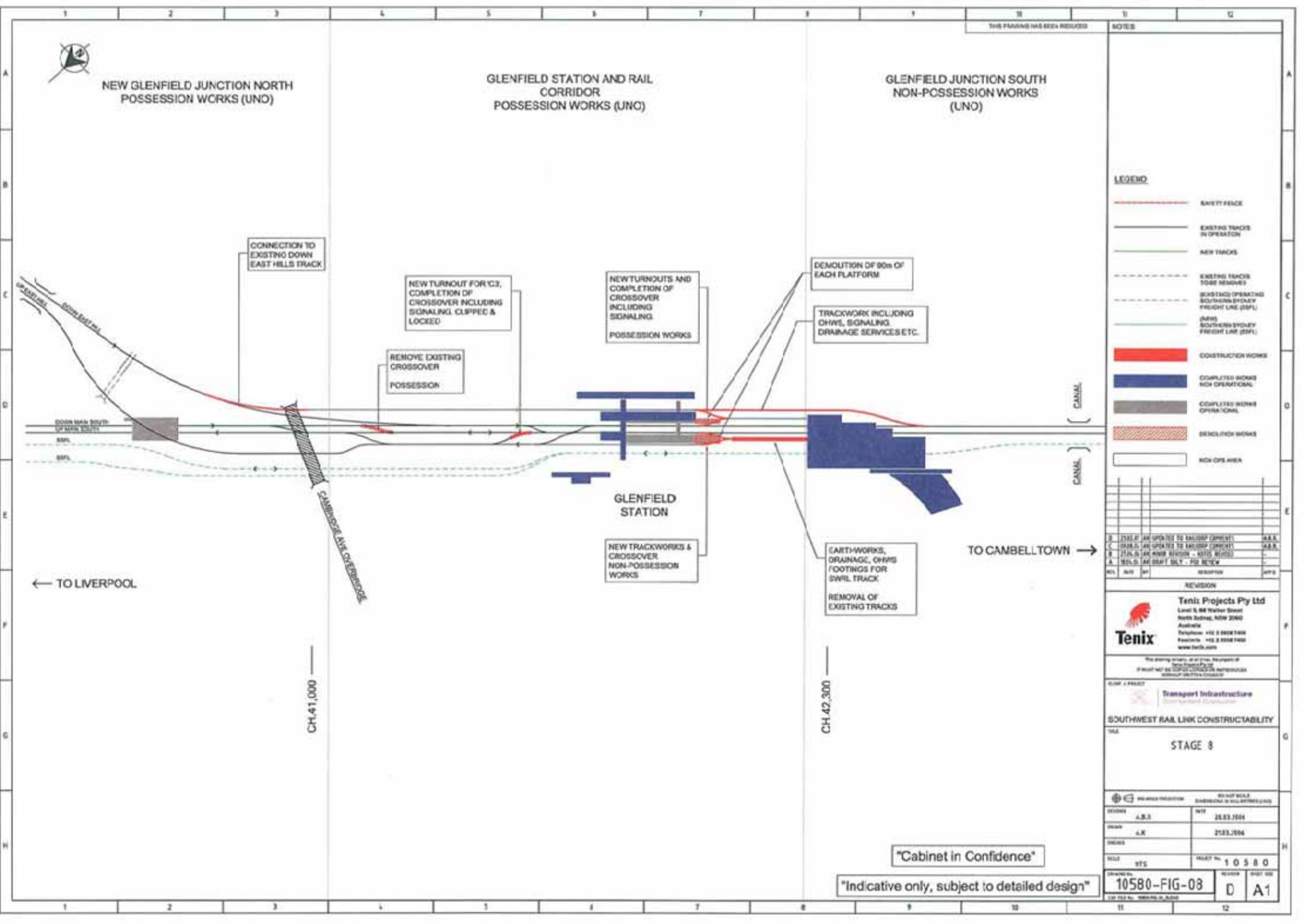
NEW GLENFIELD JUNCTION NORTH
POSSESSION WORKS (UNO)

GLENFIELD STATION AND RAIL
CORRIDOR
POSSESSION WORKS (UNO)

GLENFIELD JUNCTION SOUTH
NON-POSSESSION WORKS
(UNO)

THIS DRAWING HAS BEEN REDUCED

NOTES



LEGEND

- SAFETY FENCE
- EXISTING TRACKS IN OPERATION
- NEW TRACKS
- - - - - EXISTING TRACKS TO BE REMOVED
- - - - - EXISTING OPERATING SOUTHWARD FREIGHT LINE (SDFL)
- - - - - (NDF) SOUTHWARD FREIGHT LINE (SDFL)
- CONSTRUCTION WORKS
- COMPLETED WORKS NOT OPERATIONAL
- COMPLETED WORKS OPERATIONAL
- SIGNAL FOOT WORKS
- NON-OPS AREA

NO.	DATE	BY	REVISION	APP'D
B			TRACK PLAN UPDATED TO INCLUDE (PRINT)	A.A.B.
C			TRACK PLAN UPDATED TO INCLUDE (PRINT)	A.A.B.
D			TRACK PLAN REVISION - NOTES REVISED	-
A			TRACK PLAN FIRST DRAFT - FOR REVIEW	-

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Transport Infrastructure
Government of Western Australia

SOUTHWEST RAIL LINK CONSTRUCTABILITY
STAGE 8

NO.	DATE	BY	REVISION
REVISED	A.B.3	WT	25.03.2004
ISSUED	A.E		25.03.2004

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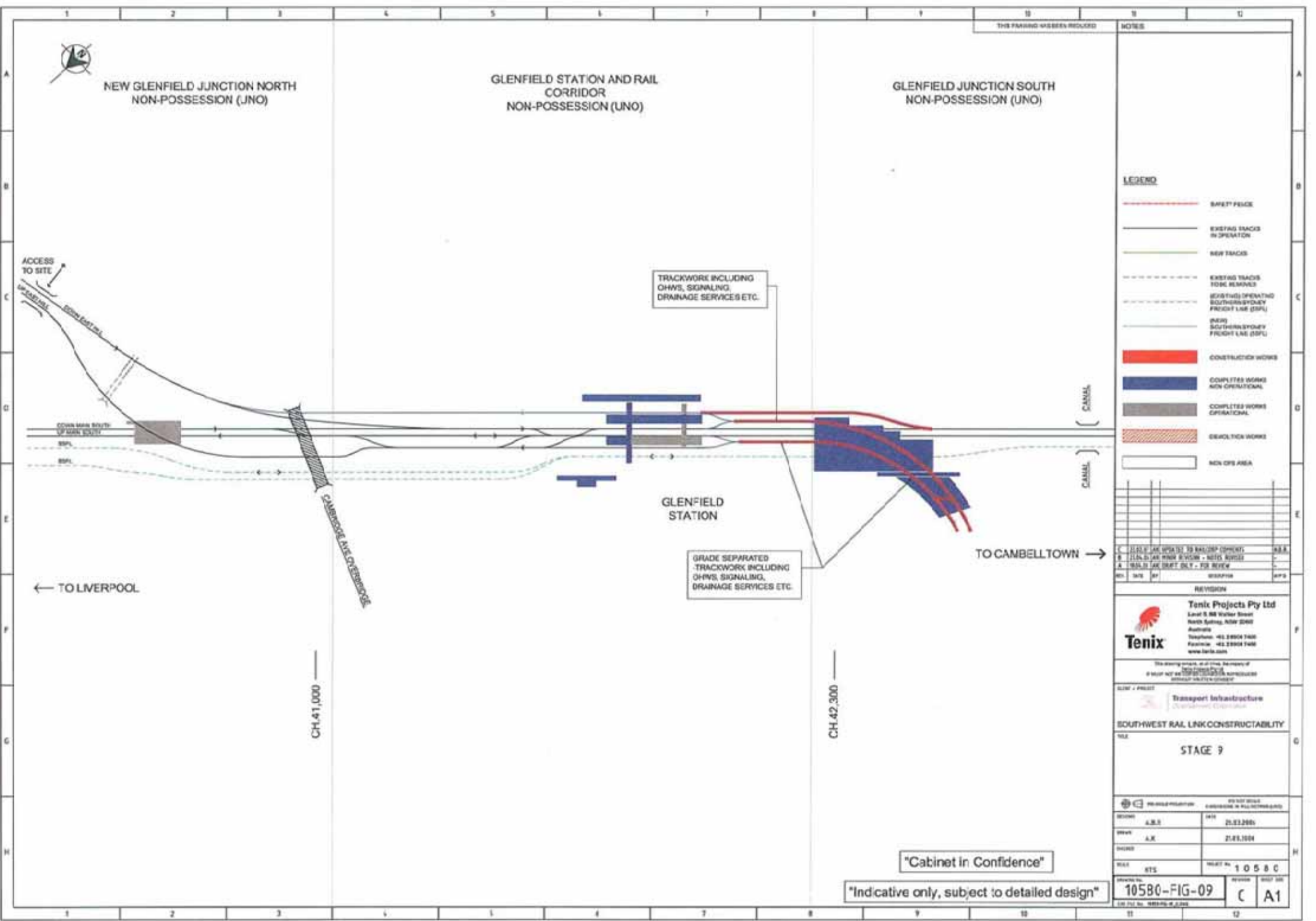
PROJECT No.	10580	REVISION	D	SHEET No.	A1
10580-FIG-03					

← TO LIVERPOOL

TO CABBELTOWN →

CH 41,000

CH 42,300



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NOTES

LEGEND

- SAFETY FENCE
- EXISTING TRACKS IN OPERATION
- NEW TRACKS
- EXISTING TRACKS TO BE REMOVED
- EXISTING OPERATING SOUTHERNSPOREY FREIGHT LINE (SDFL)
- NEW SOUTHERNSPOREY FREIGHT LINE (SDFU)
- █ CONSTRUCTION WORKS
- █ COMPLETED WORKS NON OPERATIONAL
- █ COMPLETED WORKS OPERATIONAL
- █ GEOTECHNICAL WORKS
- NON OPS AREA

NO.	DATE	BY	DESCRIPTION	APP'D

REVISION

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Transport Infrastructure Development Corporation

SOUTHWEST RAIL LINK CONSTRUCTABILITY

SCALE

STAGE 9

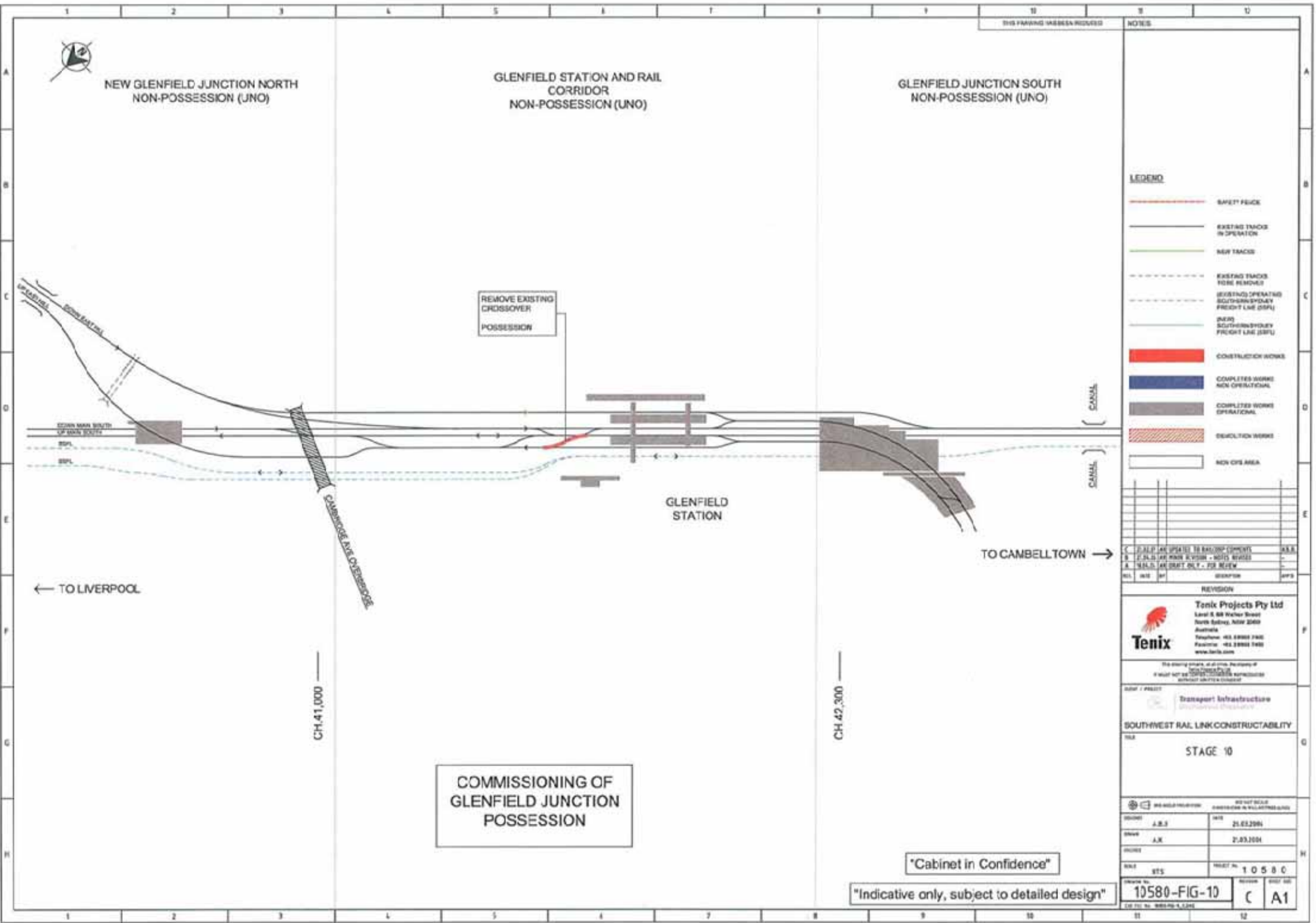
PROJECT NO. 10580-FIG-09

DESIGNED	A.S.S.	DATE	21.03.2005
DRAWN	A.X.	DATE	21.03.2004
CHECKED			

SCALE	RTS	PROJECT No.	10580
REVISION		NO.	C
DRWING No.	10580-FIG-09	NO.	A1

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NOTES

LEGEND

- SAFETY FENCE
- EXISTING TRACKS IN OPERATION
- NEW TRACKS
- - - EXISTING TRACKS TO BE REMOVED
- - - EXISTING OPERATING SOUTHERNS/DAILY FREIGHT LINE (SDFL)
- - - SDFL SOUTHERNS/DAILY FREIGHT LINE (SDFL)
- █ CONSTRUCTION WORKS
- █ COMPLETED WORKS NON OPERATIONAL
- █ COMPLETED WORKS OPERATIONAL
- █ DEMOLITION WORKS
- █ NON OPS AREA

NO.	DATE	DESCRIPTION	APP'D

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GROUP 1 PROJECT
Transport Infrastructure
 Infrastructure Development

SOUTHWEST RAIL LINK CONSTRUCTABILITY

TITLE
STAGE 10

DO NOT SCALE
 DIMENSIONS ARE INDICATED BY DIMENSION LINES

DESIGNED BY	A.B.B	DATE	21.02.2001
DRAWN BY	A.X	27.03.2001	
CHECKED BY			
SCALE	875	PROJECT NO.	1 0 5 8 0

DRAWING NO.	10580-FIG-10	REVISION	C	DRAWN BY	A1
DATE	21.02.2001				

COMMISSIONING OF
 GLENFIELD JUNCTION
 POSSESSION

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CH 41,000

CH 42,300

← TO LIVERPOOL

TO CABBELLTOWN →

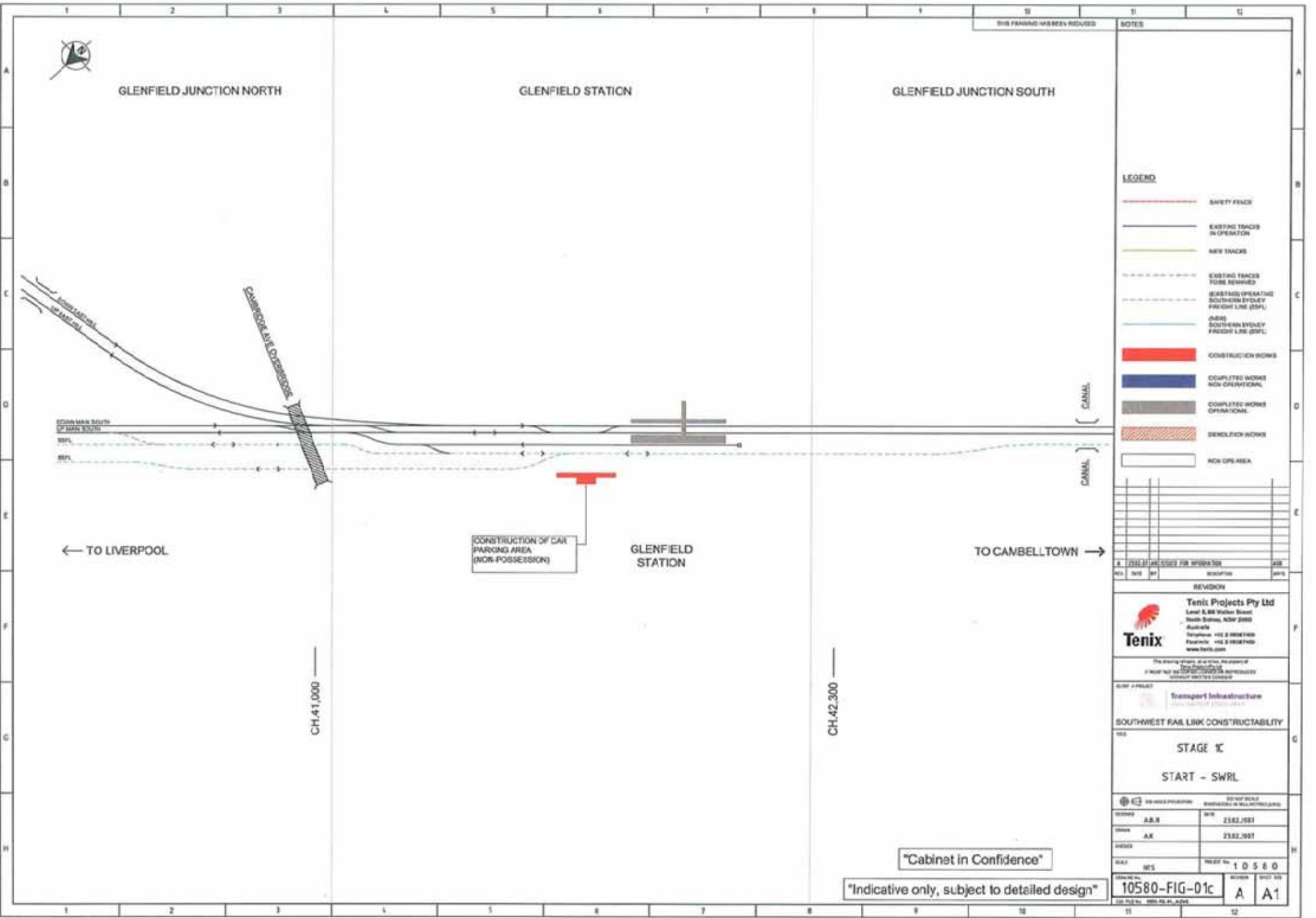
REMOVE EXISTING
 CROSSOVER
 POSSESSION

GLENFIELD
 STATION

NEW GLENFIELD JUNCTION NORTH
 NON-POSSESSION (UNO)

GLENFIELD STATION AND RAIL
 CORRIDOR
 NON-POSSESSION (UNO)

GLENFIELD JUNCTION SOUTH
 NON-POSSESSION (UNO)



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NOTES

LEGEND

- SAFETY FENCE
- EXISTING TRACKS IN OPERATION
- NEW TRACKS
- EXISTING TRACKS TO BE REMOVED
- EXISTING OPERATING SOUTHERN SYDNEY FREIGHT LINE (SSFL)
- (NSR) SOUTHERN SYDNEY FREIGHT LINE (SSFL)
- CONSTRUCTION WORKS
- COMPLETED WORKS NON OPERATIONAL
- COMPLETED WORKS OPERATIONAL
- DEMOLITION WORKS
- NON-OPER AREA

NO.	DATE	BY	DESCRIPTION	APP'D

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SOUTHWEST RAIL LINK CONSTRUCTABILITY

NO.

STAGE 1C

START - SWRL

REVISED	BY	DATE	DESCRIPTION

PROJECT No. 1 0 5 6 0

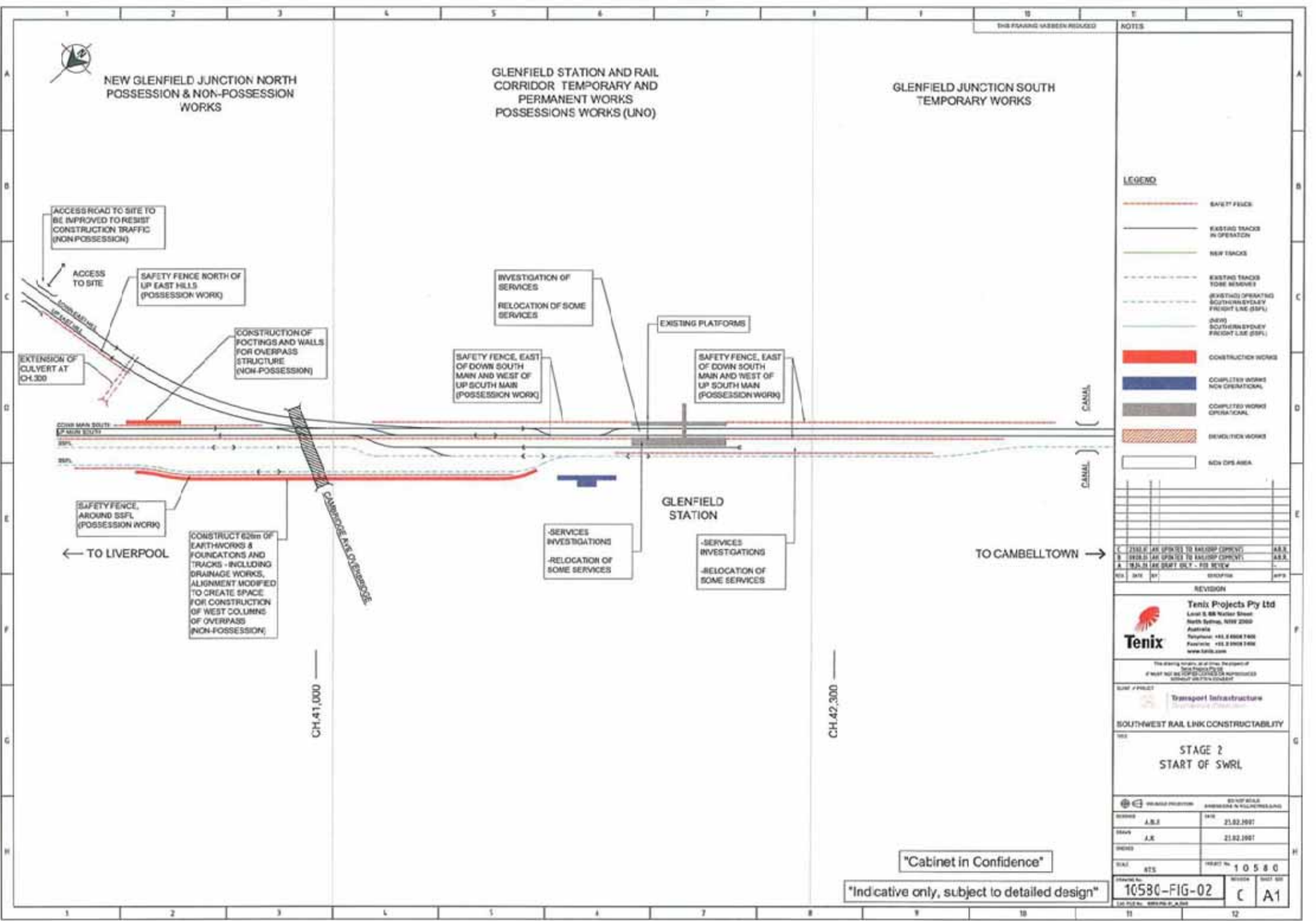
DRAWING No. **10580-FIG-01c**

REVISION No. **A**

SHEET No. **A1**

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NOTES	
---	SAFETY FENCE
—	EXISTING TRACKS IN OPERATION
—	NEW TRACKS
- - -	EXISTING TRACKS TO BE REMOVED
- - -	EXISTING OPERATING SOUTHERNSIDEWAY FREIGHT LINE (SSFL)
- - -	NEW SOUTHERNSIDEWAY FREIGHT LINE (SSFL)
[Red Box]	CONSTRUCTION WORKS
[Blue Box]	COMPLETED WORKS NON OPERATIONAL
[Grey Box]	COMPLETED WORKS OPERATIONAL
[Hatched Box]	DEMOLITION WORKS
[White Box]	NON OPS AREA

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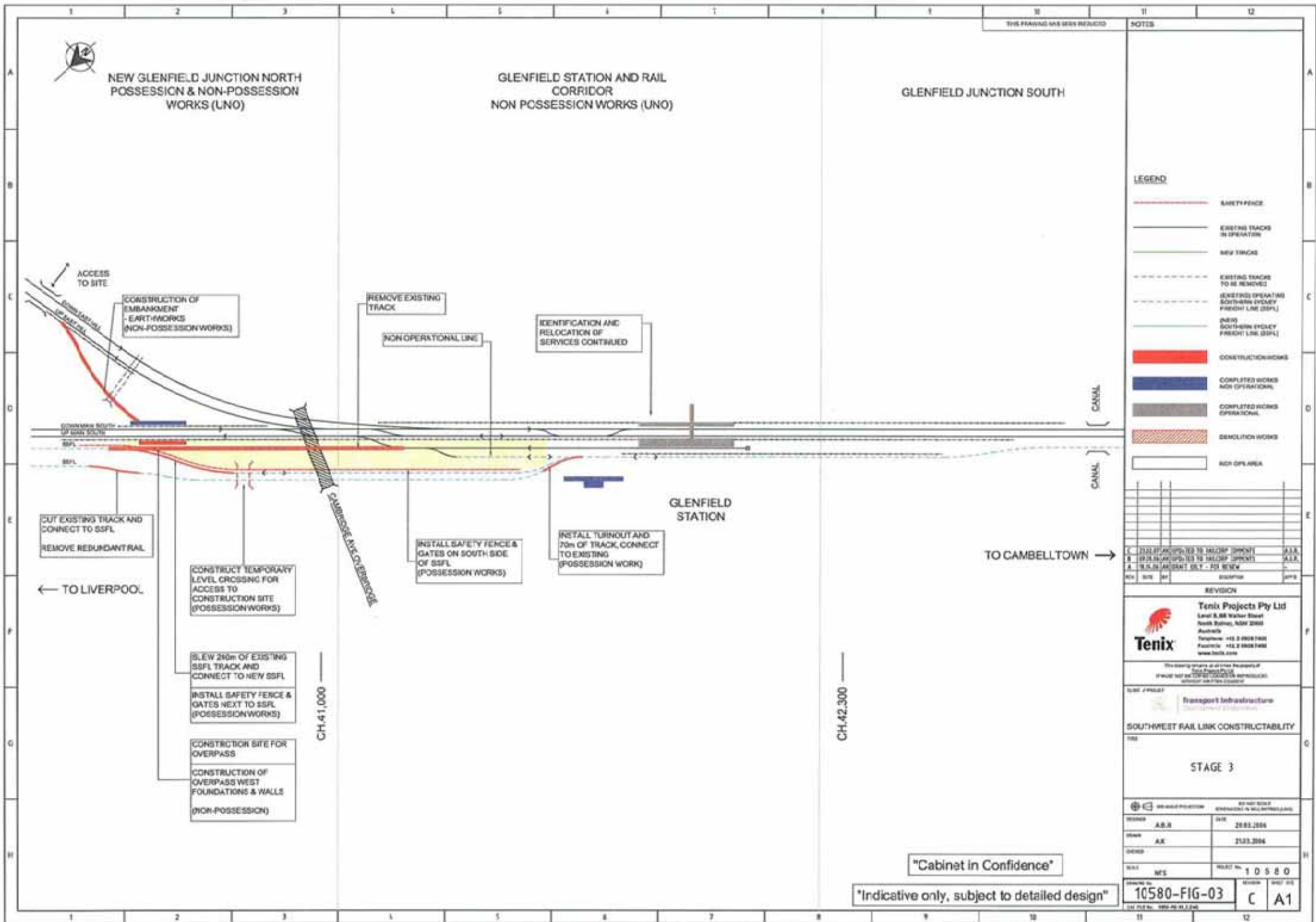
Tenix

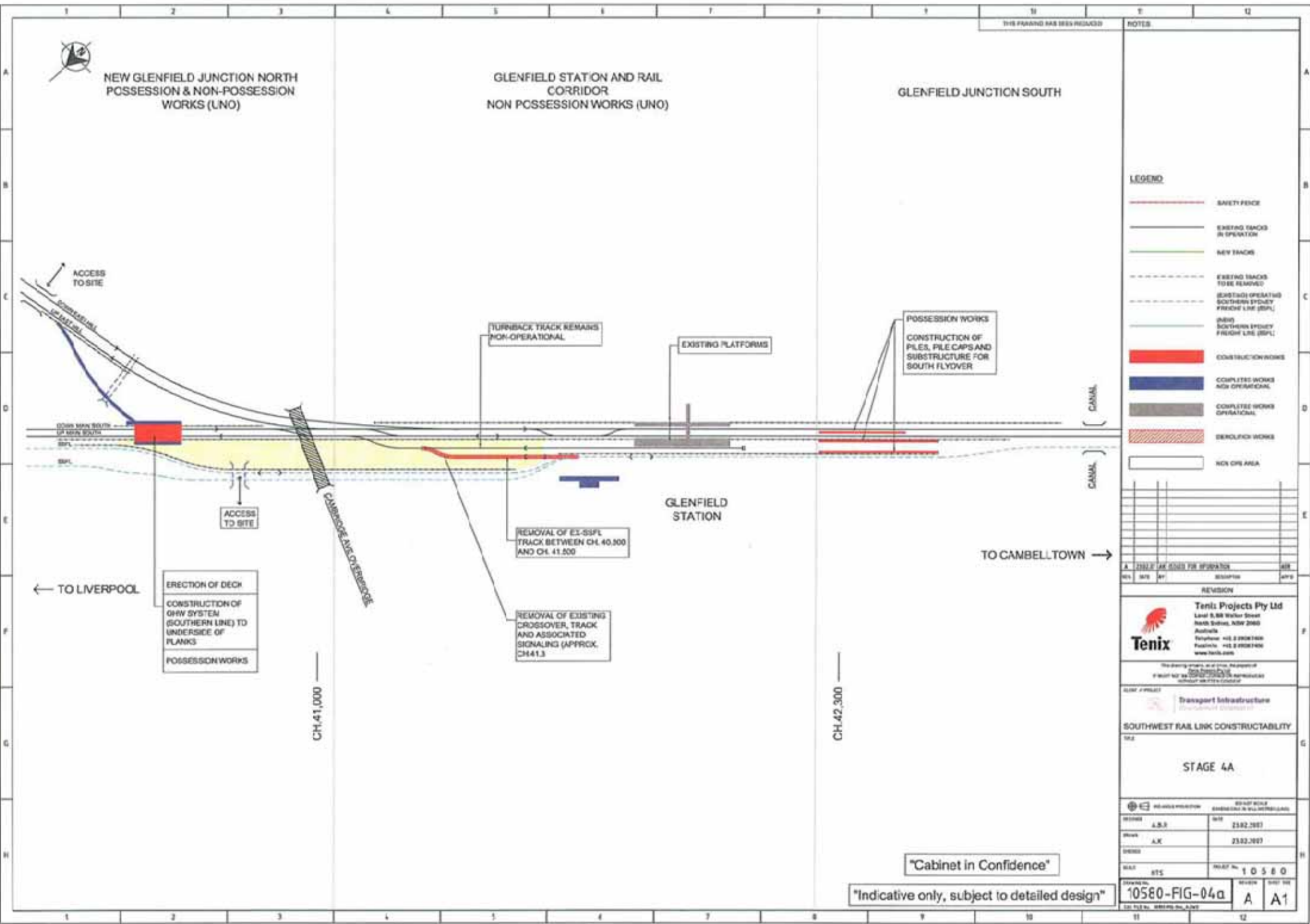
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SOUTH WEST RAIL LINK CONSTRUCTABILITY	
STAGE 2 START OF SWRL	
ISSUED FOR PERMIT	ISSUED FOR CONSTRUCTION
ISSUED BY: J.B.J	DATE: 21.02.2007
ISSUED BY: J.B.J	DATE: 21.02.2007
ISSUED BY:	DATE:
SCALE: 4:1	PROJECT No: 1 0 5 8 0
Drawn by: J.B.J	Checked by: C
Sheet No: 10580-FIG-02	Sheet Size: A1

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NOTES

LEGEND

- SAFETY FENCE
- EXISTING TRACKS IN OPERATION
- NEW TRACKS
- EXISTING TRACKS TO BE REMOVED
- (EXISTING) OPERATING SOUTHERN SPIDNEY FREIGHT LINE (SSFL)
- (NEW) SOUTHERN SPIDNEY FREIGHT LINE (SSFL)
- CONSTRUCTION WORKS
- COMPLETE WORKS AND OPERATIONAL
- COMPLETE WORKS OPERATIONAL
- BERTOLUCCI WORKS
- NON OPS AREA

NO.	DATE	BY	DESCRIPTION	APP'D
REVISION				

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CLIENT: **Transport Infrastructure**
 Development Department

SOUTHWEST RAIL LINK CONSTRUCTABILITY

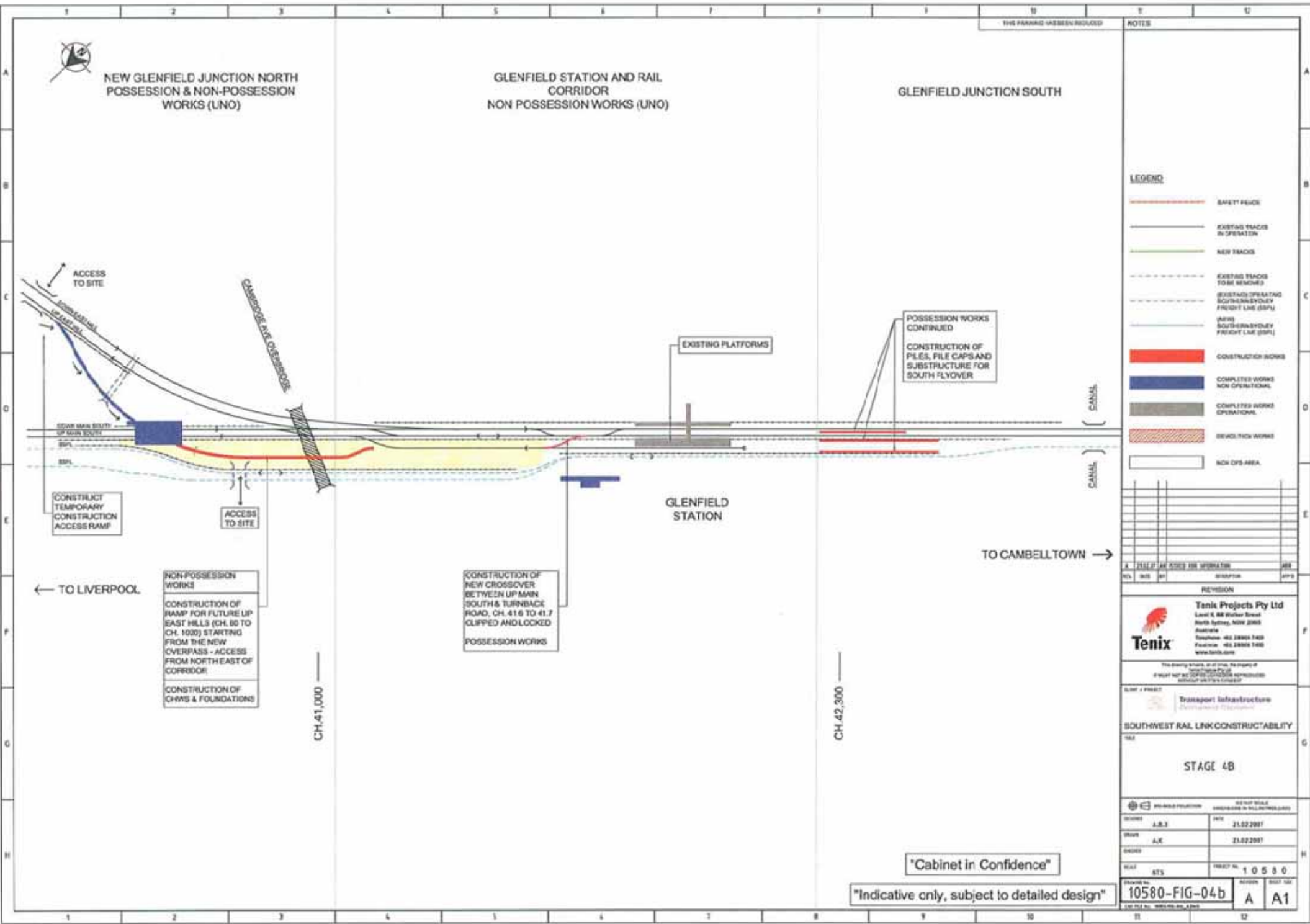
STAGE 4A

ISSUED FOR	DATE	ISSUED BY	DATE
DESIGN	23.02.2017	A.S.B.	23.02.2017
REVISED	23.02.2017	A.K.	23.02.2017
ISSUED			
DRAWN			
CHECKED			
DATE	BY	PROJECT No.	10580

PROJECT No. **10580-FIG-04a**
 SHEET No. **A1**

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NOTES

LEGEND

	SAFETY FENCE
	EXISTING TRACKS IN OPERATION
	NEW TRACKS
	EXISTING TRACKS TO BE REMOVED
	(EXISTING) OPERATING SOUTHWEST RAIL FREIGHT LINE (SRFL)
	EXISTING SOUTHWEST RAIL FREIGHT LINE (SRFL)
	CONSTRUCTION WORKS
	COMPLETED WORKS NON OPERATIONAL
	COMPLETED WORKS OPERATIONAL
	SEVERAL TON WORKS
	NON OPS AREA

NO.	DATE	DESCRIPTION	BY

REVISION

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The drawing is issued on the authority of the following signatories:
 If used for any other purpose, the user assumes all responsibility without liability to the contractor.

CLIENT PROJECT

Transport Infrastructure Development Corporation

SOUTHWEST RAIL LINK CONSTRUCTABILITY

STAGE 4B

DESIGNED	DATE
J.B.J	21.02.2007
A.C	21.02.2007

"Cabinet in Confidence"

"Indicative only, subject to detailed design"

PROJECT NO.	10580	REVISION	A
DRAWING NO.	10580-FIG-04b	SHEET NO.	A1

NON-POSSESSION WORKS

CONSTRUCTION OF RAMP FOR FUTURE UP EAST HILLS (CH. 80 TO CH. 1020) STARTING FROM THE NEW OVERPASS - ACCESS FROM NORTH EAST OF CORRIDOR.

CONSTRUCTION OF CHWS & FOUNDATIONS

CONSTRUCTION OF NEW CROSSOVER BETWEEN UP MAIN SOUTH & TURNBACK ROAD, CH. 41.6 TO 41.7 CLIPPED AND LOOKED

POSSESSION WORKS

CONSTRUCT TEMPORARY CONSTRUCTION ACCESS RAMP

CONSTRUCTION WORKS CONTINUED

CONSTRUCTION OF PILES, FILE CAPS AND SUBSTRUCTURE FOR SOUTH FLYOVER

EXISTING PLATFORMS

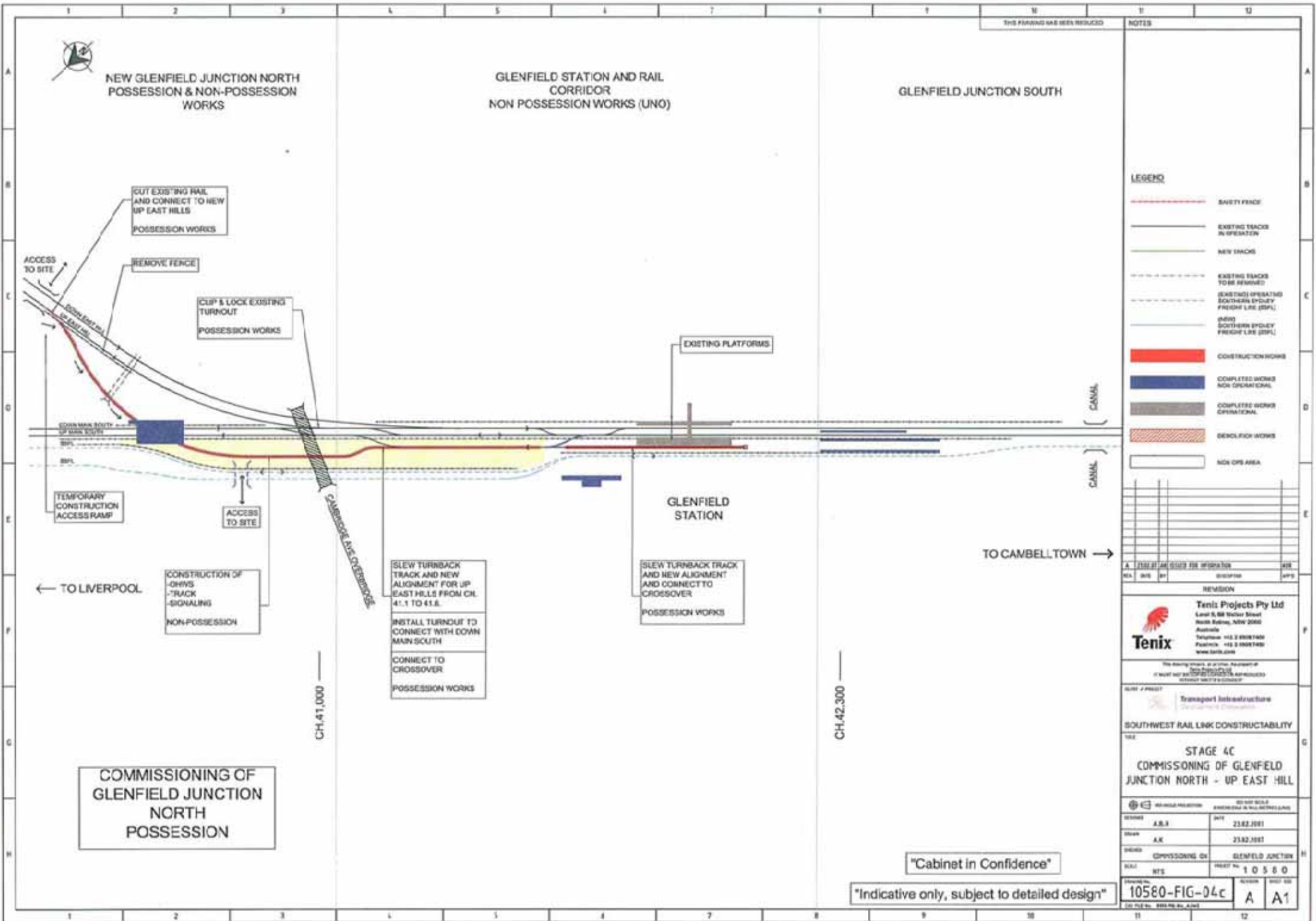
GLENFIELD STATION

TO CABELLTOWN →

← TO LIVERPOOL

CH.41,000

CH.42,500



THIS DRAWING HAS BEEN REDUCED

NOTES

LEGEND

	SAFETY FENCE
	EXISTING TRACKS IN OPERATION
	NEW TRACKS
	EXISTING TRACKS TO BE REMOVED
	(EXISTING) OPERATING SOUTHERN SPIDLEY FREIGHT LINE (SSFL)
	NEW SOUTHERN SPIDLEY FREIGHT LINE (SSFL)
	CONSTRUCTION WORKS
	COMPLETED WORKS NOT OPERATIONAL
	COMPLETED WORKS OPERATIONAL
	DEMOLITION WORKS
	NOT OPS AREA

NO	DATE	DESCRIPTION	APP'D

REVISION

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The drawing is issued as a final document if it must not be modified without the approval of the design team.

Transport Infrastructure
 Development Corporation

SOUTHWEST RAIL LINK CONSTRUCTABILITY

STAGE 4C
COMMISSIONING OF GLENFIELD JUNCTION NORTH - UP EAST HILL

REVISION	DATE
A.B.3	23.02.2001
A.K	23.02.2001
DESIGN	COMMISSIONING OF GLENFIELD JUNCTION
DRAWN	DATE
SCALE	PROJECT No.
10580-FIG-04c	1 0 5 8 0
A	A1

"Cabinet in Confidence"

"Indicative only, subject to detailed design"

COMMISSIONING OF
 GLENFIELD JUNCTION
 NORTH
 POSSESSION

CH.41.000

CH.42.300

← TO LIVERPOOL

TO CAMPELLTOWN →

GLENFIELD STATION

NEW GLENFIELD JUNCTION NORTH
 POSSESSION & NON-POSSESSION
 WORKS

GLENFIELD STATION AND RAIL
 CORRIDOR
 NON POSSESSION WORKS (UNO)

GLENFIELD JUNCTION SOUTH

CUT EXISTING RAIL
 AND CONNECT TO NEW
 UP EAST HILLS
 POSSESSION WORKS

REMOVE FENCE

CLIP & LOCK EXISTING
 TURNOUT
 POSSESSION WORKS

EXISTING PLATFORMS

TEMPORARY
 CONSTRUCTION
 ACCESS RAMP

ACCESS
 TO SITE

CONSTRUCTION OF
 -DRYNS
 -TRACK
 -SIGNALING
 NON-POSSESSION

SLEW TURNBACK
 TRACK AND NEW
 ALIGNMENT FOR UP
 EAST HILLS FROM CH.
 41.1 TO 41.8.

INSTALL TURNOUT TO
 CONNECT WITH DOWN
 MAIN SOUTH
 CONNECT TO
 CROSSOVER
 POSSESSION WORKS

SLEW TURNBACK TRACK
 AND NEW ALIGNMENT
 AND CONNECT TO
 CROSSOVER
 POSSESSION WORKS

CABRAL