311 Hume Highway, Liverpool

DA Acoustic Assessment

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1 INTRODUCTION

This report presents an analysis of acoustic impacts associated with the proposed residential apartment development at 311 Hume Highway, Liverpool.

In this report we will conduct an external noise impact assessment (primarily traffic noise) and recommend acoustic treatments to ensure that a reasonable level of amenity is achieved for future tenants.

This report is conducted in reference to;

- Liverpool Council DCP 2008
- State Environmental Planning Policy (SEPP Infrastructure) 2007
- Australian Standard AS-2107:2000

The analysis will be undertaken with reference to the architectural drawing set provided by Design Workshop, of Job Number 1086, dated July 2015.

2 SITE DESCRIPTION

The development consists of 3 towers, referred to as Building A (8 stories), Building B (8 stories), Tower-600 (31 stories), with 4 additional basement levels for car-parking, located at 331 Hume Highway, Liverpool. The site is bounded as follows;

- To the north by Hoxton Park Road, carrying high volumes of traffic flow.
- To the east by Hume Highway, carrying high volumes of traffic flow.
- To the south by Collingwood Hotel, with an external courtyard bounding the development site. This courtyard is in use during the night time period by patrons
- To the west by Gillespie Street, carrying low volumes of traffic flow.

Figure 1 – Proposed Development Site

Attended Noise Monitoring Locations

Unattended Noise Monitoring Locations

3 NOISE DESCRIPTORS

Traffic noise constantly varies in level, due to fluctuations in traffic speed, vehicle types, road conditions and traffic densities. Accordingly, it is not possible to accurately determine prevailing traffic noise conditions by measuring a single, instantaneous noise level. To accurately determine the effects of traffic noise a 15-20 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters. These parameters are used to measure how much annoyance would be caused by a particular noise source.

In the case of environmental noise, three principle measurement parameters are used, namely L_{10}, L_{90} and L_{eq}.

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced at the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of traffic noise.

Current practice favours the L_{eq} parameter as a means of measuring traffic noise, whereas the L_{10} parameter has been used in the past and is still incorporated in some codes. For the reasons outlined above, the L_{90} parameter is not used to assess traffic noise intrusion.

4 NOISE INTRUSION CRITERIA

The most significant traffic noise from within the vicinity of the site is caused by road traffic along Hoxton Park Road and Hume Highway, to the north and east of the project site, respectively. Both roadways carry high volumes of traffic flow. Noise impacts from the road traffic noise should comply with the requirements of the Liverpool City Council DCP 2008, the SEPP 2007 and AS-2107:2000.

Noise emission from patron use of the external courtyard of the Collingwood Hotel to the south of the site have also been assessed to the recommended internal noise levels of AS2107:2000.

4.1 ACOUSTIC OBJECTIVES

4.1.1 Liverpool City Council DCP 2008

There are no specific criteria stated in the Liverpool City Council DCP relating to acoustic amenity, therefore criteria will be set from the SEPP 2007 and AS2107, as presented below.

4.1.2 State Environmental Planning Policy (SEPP Infrastructure) 2007

Although not directly referred to in the City of Sydney Council DCP (2012) the road traffic noise criteria, as specified in the State Environmental Planning Policy (SEPP Infrastructure) 2007, additionally applies to this site.

Clause 102 of the SEPP states:

> *"This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transit way or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:*
>
> *(a) a building for residential use,*
>
> *If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following L_{Aeq} levels are not exceeded:*
>
> *(a) in any bedroom in the building – 35 dB(A) at any time between 10 pm and 7am,*
>
> *(b) anywhere else in the building (other than a garage, kitchen, bathroom or hallway) – 40 dB(A) at any time."*

4.1.3 Australian Standard AS2107

The following criteria is set for internal noise goals of habitable spaces, based on AS2107;

Table 1 –AS2107 Noise Criteria

Room Type	Criteria
Bedroom	≤ 35 dB(A) $L_{eq\ (9\ hour)}$
Living Room	≤ 40 dB(A) $L_{eq\ (15\ hour)}$

4.1.4 Summary of Noise Intrusion Criteria

The most stringent criteria for each room type is used, and summarised below.

Table 2 - Summary of Criteria

Space /Activity Type	Criteria Standard	Time Period	Recommended Maximum Design Sound Level dB(A)
Bedroom	SEPP	10:00pm-7:00am	35 dB(A) $L_{Aeq(9hour)}$
Bedroom	AS2107	10:00pm-7:00am	35 dB(A) $L_{Aeq(9hour)}$
Living Room	SEPP	7:00am-10:00pm	40 dB(A) $L_{Aeq,\ 15\ hour}$

5 MEASUREMENTS

Traffic noise measurements were taken at the site of the proposed development. Measurements were performed generally in accordance with the Australian Standard AS1055 – "Description and measurement of environmental noise – General Procedures".

5.1 UNATTENDED NOISE MEASUREMENTS

Two long term noise monitors were used for this development;

- **Noise Monitor 1:** This logger was situated 5m from the kerb along Hume Highway between the 8th and 15th December May 2014. See figure 1 above for location. Refer Appendix 1 for unattended noise data.

- **Noise Monitor 2:** This noise monitor was located within the rear yard of 8 Gillespie Street, to obtain background noise levels within the vicinity, and to obtain nosie emission noise levels from the external courtyard of Collingwood Hotel. The noise monitor was on site between the 8th and 15th December 2014. See figure 1 above for location. Refer Appendix 2 for unattended noise data.

The long term monitoring was conducted using two Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted.

5.2 ATTENDED NOISE MEAUSREMENTS

Attended noise measurements were undertaken to compliment long term monitoring on the 8th December 2014, between the hours of 3:00pm and 5:00pm. Attended noise measurements were undertaken at the following locations;

- To the east of the proposed development, along Hume Highway.

- To the north of the proposed development, along Hoxton Park Road.

Measurements were undertaken using a Norsonics Type 140 precision sound level analyser, set to A-weighted fast response. The precision sound level analyser was calibrated before and after the measurements using a Norsonics 1251 precision sound level calibrator. No significant drift was recorded.

5.3 MEASUREMENT RESULTS

The traffic noise levels listed in the table below were determined based on the testing done on site. In determination of acoustic treatments at each façade, the measured level is adjusted for distance and orientation.

Table 3 - External Noise Level (Traffic Noise)

Building	Facade	Time Period	Noise Level dB(A)
Building A	Northern Façade Hoxton Park Road	Day (7am – 10pm)	72 dB(A) $L_{Aeq\ (15hour)}$
		Night (10pm – 7am)	69 dB(A) $L_{Aeq\ (9\ hour)}$
Building B	Northern Façade Hoxton Park Road	Day (7am – 10pm)	64 dB(A) $L_{Aeq\ (15hour)}$
	Eastern Façade Hume Highway	Night (10pm – 7am)	61 dB(A) $L_{Aeq\ (9\ hour)}$
Tower 600	Northern Façade Hoxton Park Road	Day (7am – 10pm)	72 dB(A) $L_{Aeq\ (15hour)}$
		Night (10pm – 7am)	69 dB(A) $L_{Aeq\ (9\ hour)}$
	Eastern Façade Hume Highway	Day (7am – 10pm)	73 dB(A) $L_{Aeq\ (15hour)}$
		Night (10pm – 7am)	70 dB(A) $L_{Aeq\ (9\ hour)}$

6 EVALUATION OF NOISE INTRUSION

Internal noise levels will primarily be as a result of noise transfer through the windows and doors and roof, as these are relatively light building elements that offer less resistance to the transmission of sound.

The predicted noise levels through the windows, doors and roof are discussed below. The predicted noise levels have been based on the measured level and spectral characteristics of the external noise, the area of building elements exposed to traffic noise, the absorption characteristics of the rooms and the noise reduction performance of the building elements.

In all cases, the recommended constructions (refer below) reduces internal noise levels to within the nominated criteria for the various space types.

Noise intrusion recommendations have been provided to attenuate noise from surrounding road traffic, as well as from the Collingwood Hotel external courtyard.

6.1 RECOMMENDED GLAZING

Appendix 3 below details the recommended glazing assemblies for this project to achieve the internal traffic noise requirements. All external windows and doors listed are required to be fitted with Q-lon type acoustic seals.

The glazing thicknesses recommended are those needed to satisfy acoustic requirements and do not take into account other requirements such as thermal, structural, safety or other considerations. These additional considerations may require the glazing thickness to be increased beyond the acoustic requirement. In such cases, thicker window glazing will be acoustically acceptable.

In addition to complying with the minimum scheduled glazing thickness, the STC rating of the glazing fitted into operable frames and fixed into the building opening should not be lower than the values listed in Table 4 for all rooms. Where nominated, this will require the use of acoustic seals around the full perimeter of operable frames and the frame will need to be sealed into the building opening using a flexible sealant. **Note that mohair seals in windows and doors are not acceptable where acoustic seals are required.**

The window/door suppliers should provide evidence that the systems proposed have been tested in a registered laboratory with the recommended glass thicknesses and comply with the minimum listed STC requirements. Also, the glazing installer should certify that the window/doors have been constructed and installed in a manner equivalent to the tested samples.

Table 4 - Minimum STC/Rw of Glazing Requirements

Glazing Assembly	Acoustic Seals	Minimum STC/Rw of Installed Window
6mm float	Yes	29
6.38m laminated	Yes	31
10.38mm laminated	Yes	35
12.38mm laminated	Yes	37
10.38mm laminated / 100mm air-gap / 6mm float	Yes	44

6.2 EXTERNAL WALLS

Walls of a masonry construction will not require further acoustic treatment.

6.3 ROOF / CEILING CONSTRUCTION

Noise intrusion through concrete roofing will not require acoustic treatment.

6.4 VENTILATION REQUIREMENTS

With respect to natural ventilation of the dwelling, the NSW Department of Planning document "Development near Busy Roads and Rail Corridors - Interim Guideline" dictates that:

- *"If internal noise levels with windows or doors open exceed the criteria by more than 10dB(A), the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia."*

With windows open, the allowable internal noise goal is permitted to be 10dB(A) higher than when the windows are closed (ie – allowable level in bedrooms becomes 45dB(A), and 50dBA() in living rooms).

For internal noise goals to be met, windows must be closed within all rooms, and mechanical ventilation is recommended for adequate ventilation.

The mechanical ventilation system should be acoustically designed to ensure that the acoustic performance of the acoustic treatments outlined above is not reduced and does not exceed Council criteria for noise emission to nearby properties.

7 NOISE EMISSION ASSESSMENT

Noise emissions from the site should be assessed to ensure that the amenity of nearby land users is not adversely affected. Noise generated by mechanical plant servicing the development has been identified as the only source of potential noise emission from the development.

Long term noise monitors were installed as follows;

- **Noise Monitor 1:** This logger was situated 5m from the kerb along Hume Highway between the 8th and 15th December May 2014. See figure 1 above for location. Refer Appendix 1 for unattended noise data.

- **Noise Monitor 2:** This noise monitor was located within the rear yard of 8 Gillespie Street, to obtain background noise levels within the vicinity, and to obtain noise emission noise levels from the external courtyard of Collingwood Hotel. The noise monitor was on site between the 8th and 15th December 2014. See figure 1 above for location. Refer Appendix 2 for unattended noise data.

Table 5 - Measured Background Noise Levels

Location	Period/Time	Background Noise Level dB(A) $L_{90(period)}$
Facing Hume Highway	Day (7am-6pm)	63
	Evening(6pm-10pm)	63
	Night(10pm-7am)	50
Rear of the site	Day (7am-6pm)	48
	Evening(6pm-10pm)	48
	Night(10pm-7am)	43

7.1 ACOUSTIC OBJECTIVES

Acoustic objectives will be based on;

- Liverpool Council DCP 2008
- The EPA Industrial Noise Policy
- The Protection of the Environment Operations Regulation Act 2000

7.1.1 Liverpool Council DCP 2008

There are no specific criteria stated in the Liverpool Council DCP relating to acoustic noise amenity from mechanical plant, therefore criteria will be from the EPA Industrial Noise Policy and The Protection of the Environment Operations Regulation Act 2000, as described below.

7.1.2 EPA Industrial Noise Policy

The EPA Industrial Noise Policy has two criteria which need to be satisfied namely Intrusiveness and Amenity. These are described below:

- *Intrusiveness Criteria* - This guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor not exceed the background noise level by more than 5 dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

- *Amenity Criteria* - This guideline is intended to limit the absolute noise level from all "industrial" noise sources such as mechanical plant to a level that is consistent with the general environment.

The EPA's Industrial Noise Policy sets out acceptable noise levels for various localities. Table 2.1 on page 16 of the policy indicates 4 categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

7.1.2.1 Intrusiveness Criterion

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor do not exceed the background noise level by more than 5dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

Background noise levels adopted are presented in Section 7.1. Noise emissions from the site should comply with the noise levels presented below when measured at nearby property boundary.

Table 6 - Intrusiveness Noise Emission Goals

Location	**Period/Time**	**Background Noise Level dB(A) $L_{90(period)}$**	**Intrusiveness Noise Emission Goal dB(A) $L_{eq(15min)}$ Background + 5dB**
Facing Hume Highway	Day (7am-6pm)	63	68
	Evening(6pm-10pm)	63	68
	Night(10pm-7am)	50	55
Rear of the site	Day (7am-6pm)	48	53
	Evening(6pm-10pm)	48	53
	Night(10pm-7am)	43	48

7.1.2.2 Amenity Criterion

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The EPA Industrial noise policy sets out acceptable noise levels for various localities. Table 2.1 on page 16 of the policy indicates 4 categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface. This site is categorised by the residential receivers as urban.

For the purposes of this condition:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening is defined as the period from 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and public holidays.

Table 7 - Amenity Noise Emission Goals

Location	Period/Time	Amenity Noise Emission Goal dB(A) $L_{eq(Period)}$
Nearby Residences	Day (7am-6pm)	60
	Evening(6pm-10pm)	50
	Night(10pm-7am)	45

7.1.3 Protection of the Environmental Operation (Noise Control) Regulation 2008

Protection of the Environmental Operations Regulation limits the noise levels associated within the operation of domestic air conditioning criteria during night time periods which is presented below:

Protection of the Environmental Operations (Noise Control) Regulation 2008-Sect 52

52 Air Conditioners

(1) A person must not cause or permit an air conditioner to be used on residential premises in such a manner that it emits noise that can be heard within a habitable room in any other residential premises (regardless of whether any door or window to that room is open):

(a) before 8 am or after 10 pm on any Saturday, Sunday or public holiday, or
(b) before 7 am or after 10 pm on any other day.

7.2 MECHANICAL PLANT

Mechanical plant items are not typically selected at DA stage.

Detailed review of all external mechanical plant should be undertaken at construction certificate stage (once plant selections and locations are finalised). Acoustic treatments should be determined in order to control plant noise emissions to the levels set out in section 7.2 of this report.

All plant can be satisfactorily attenuated to levels complying with noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct) treatments (silencers/lined ducting or similar.)

8 CONCLUSION

Potential noise impacts into the proposed mixed use development at 311 Hume Highway, Liverpool have been assessed. Our findings are below:

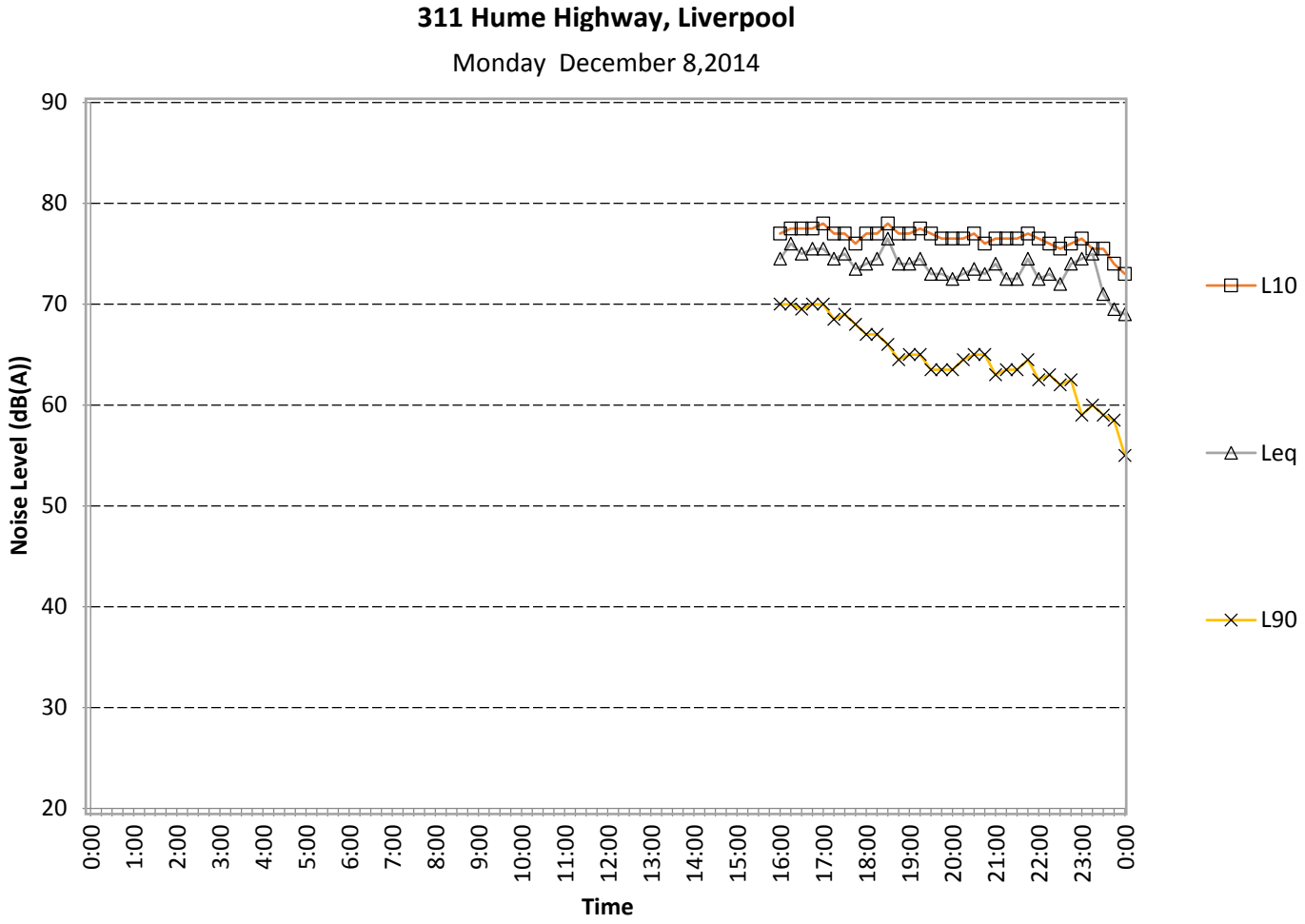
Traffic noise impacts on future occupants of the building have been assessed in accordance with council requirements, the SEPP 2007 and Australian Standard AS-2107:2000. Provided that the treatments set out in Section 6 of this report are employed, traffic noise impacts on occupants in the development will comply with relevant acoustic criteria presented in Section 4.

Noise emission objectives for the proposed development have also been determined based on on-site noise logging and noise emission guidelines typically adopted by Council, and have been presented in Section 7.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Johan Davydov

Appendix 1
Unattended Noise Measurements
Road Traffic – 331 Hume Highway, Liverpool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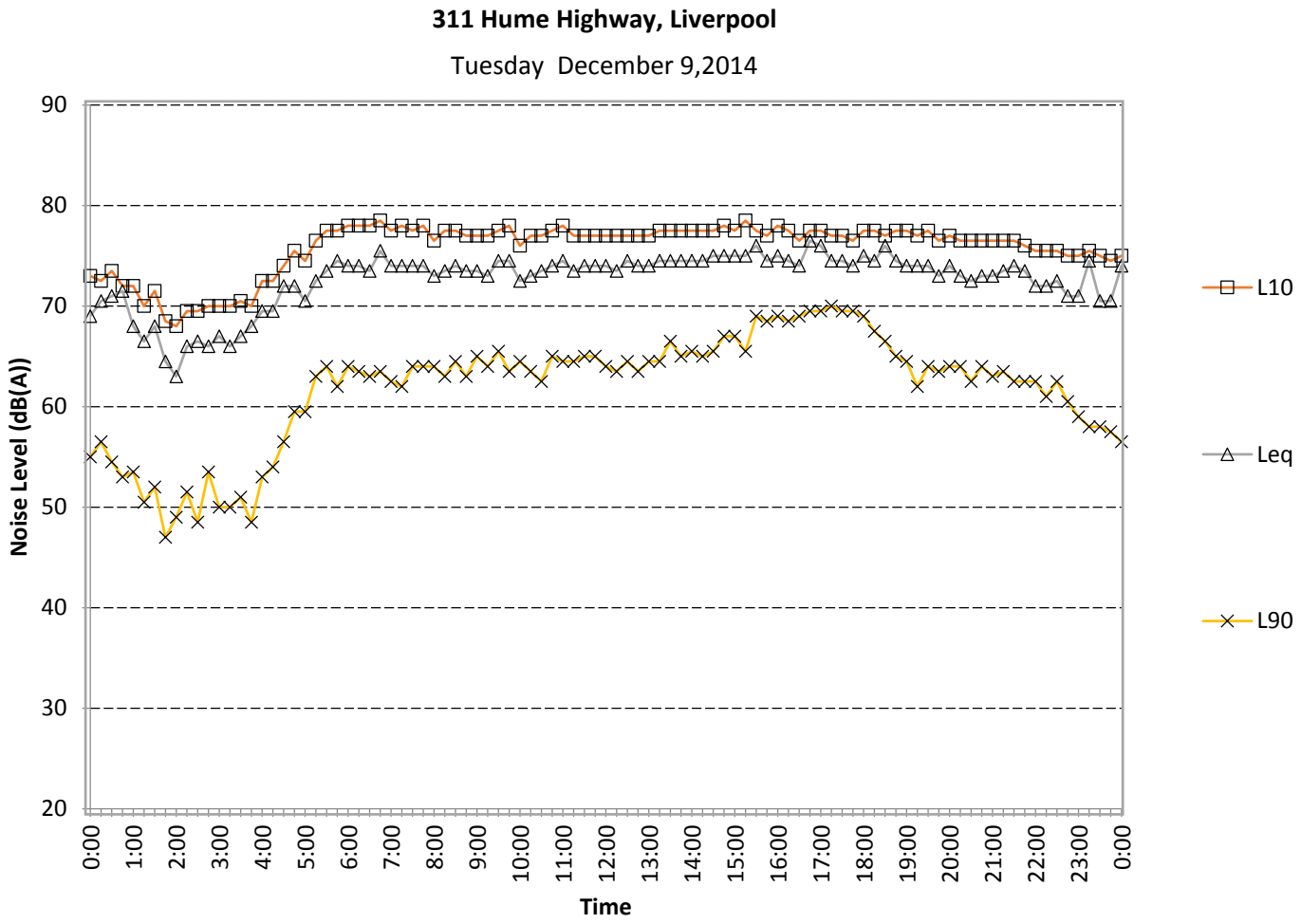
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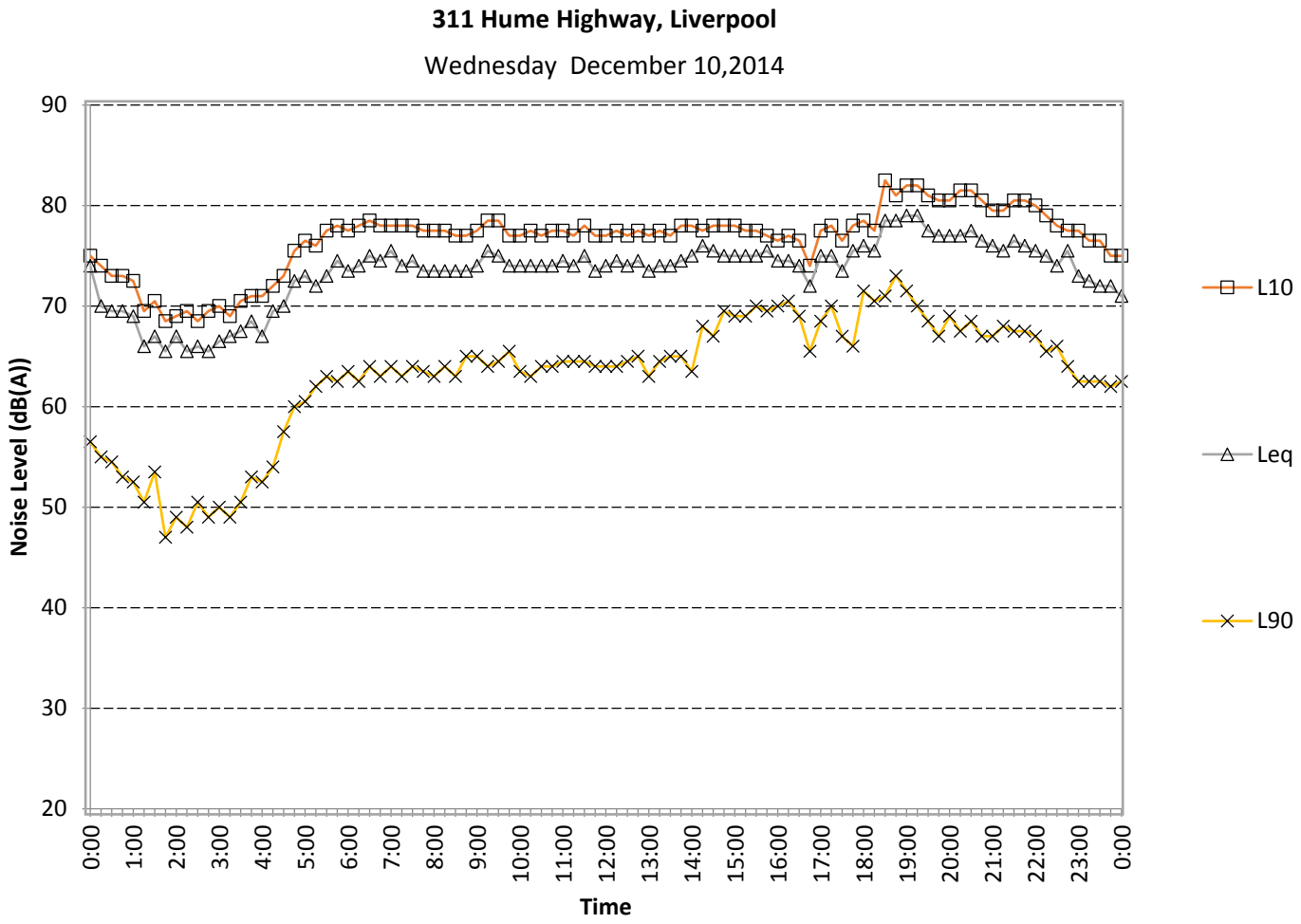
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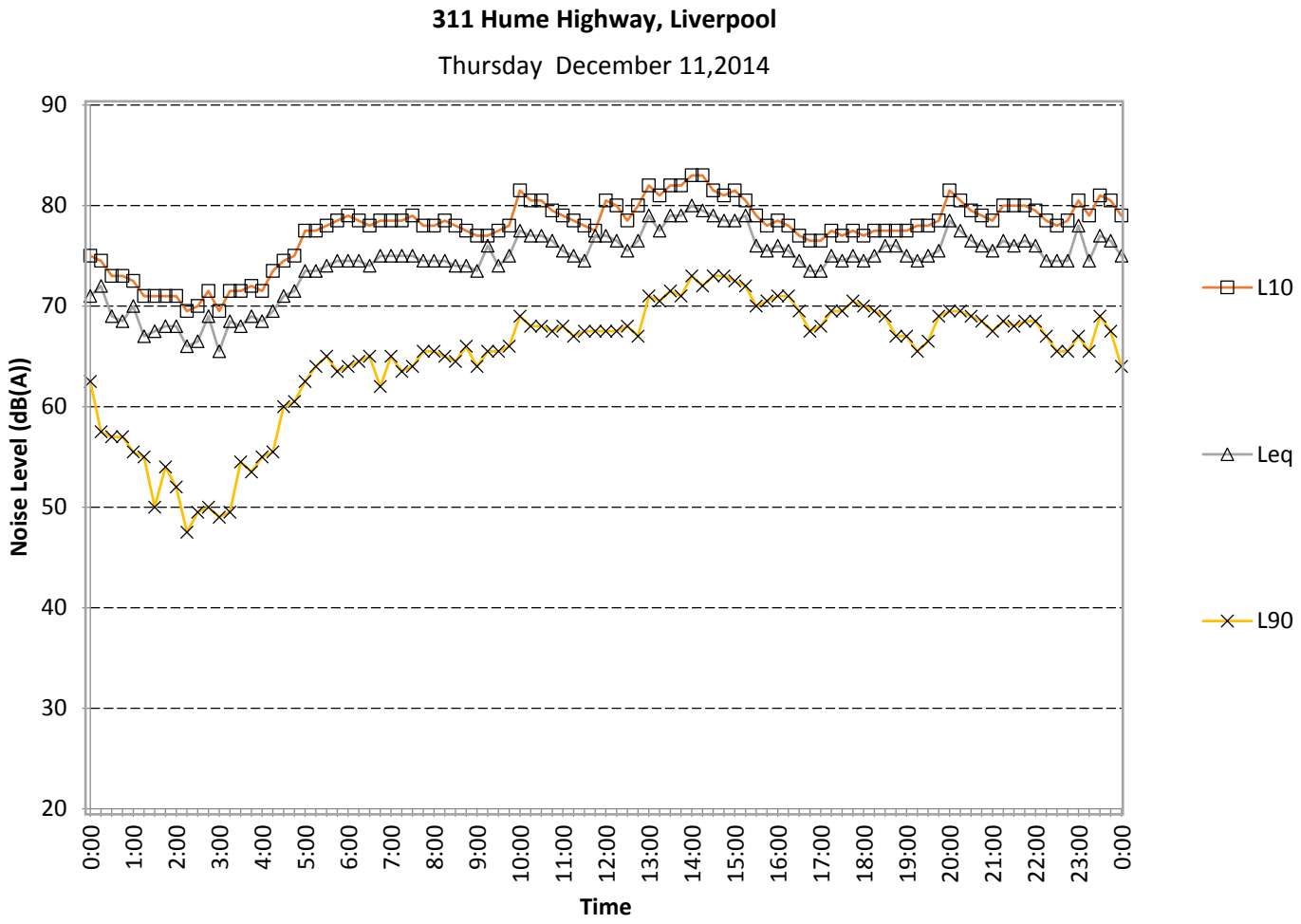
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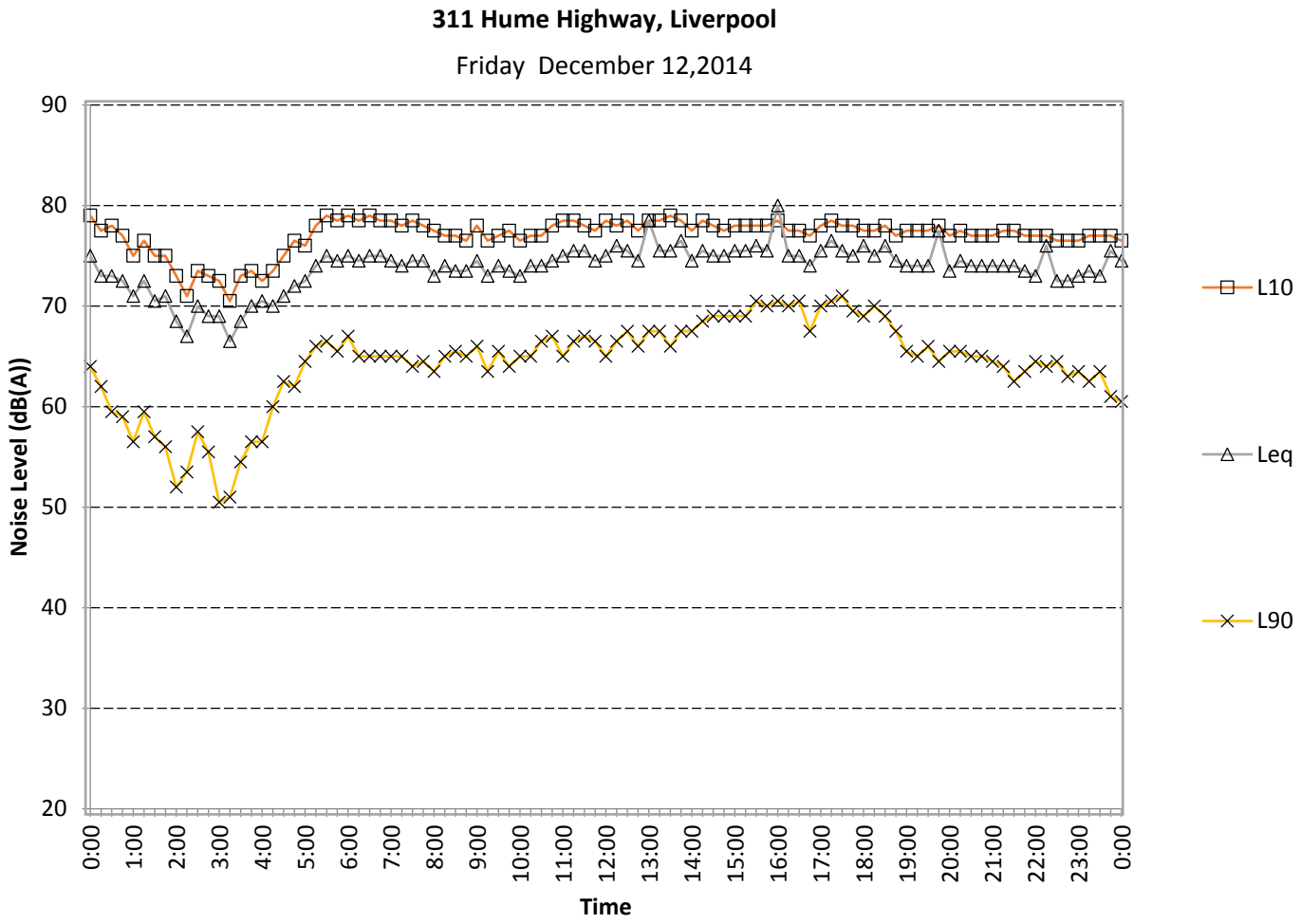
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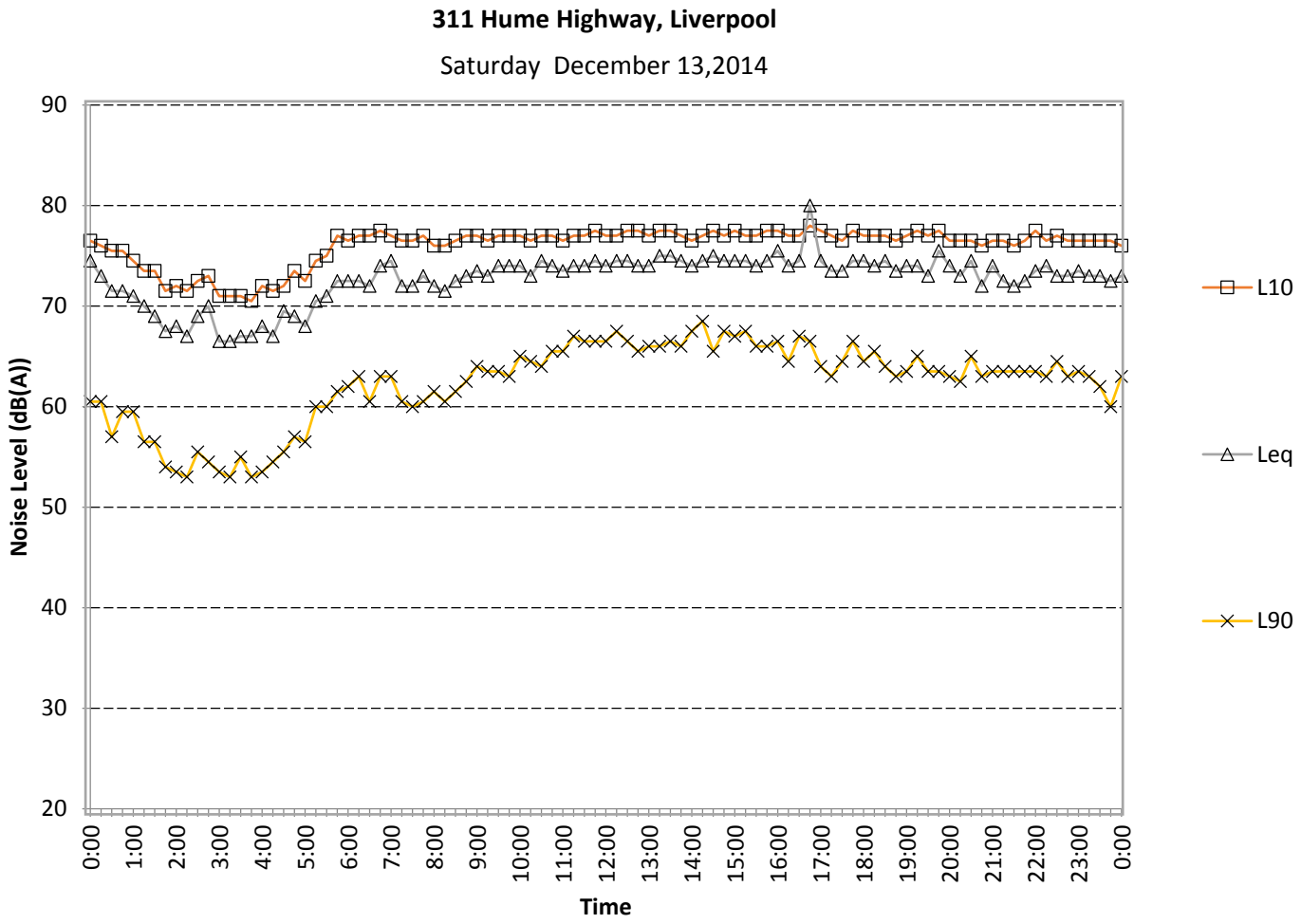
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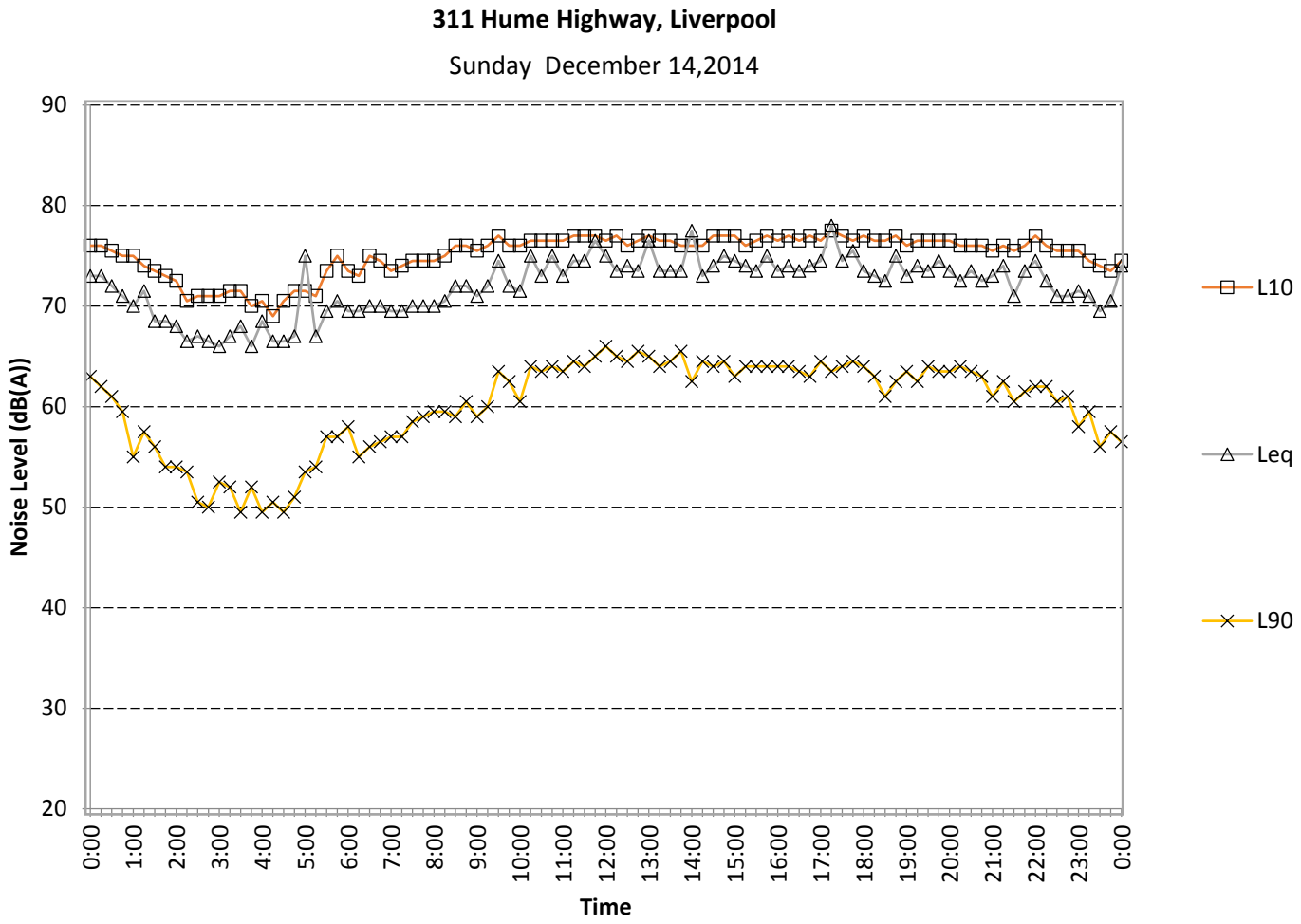
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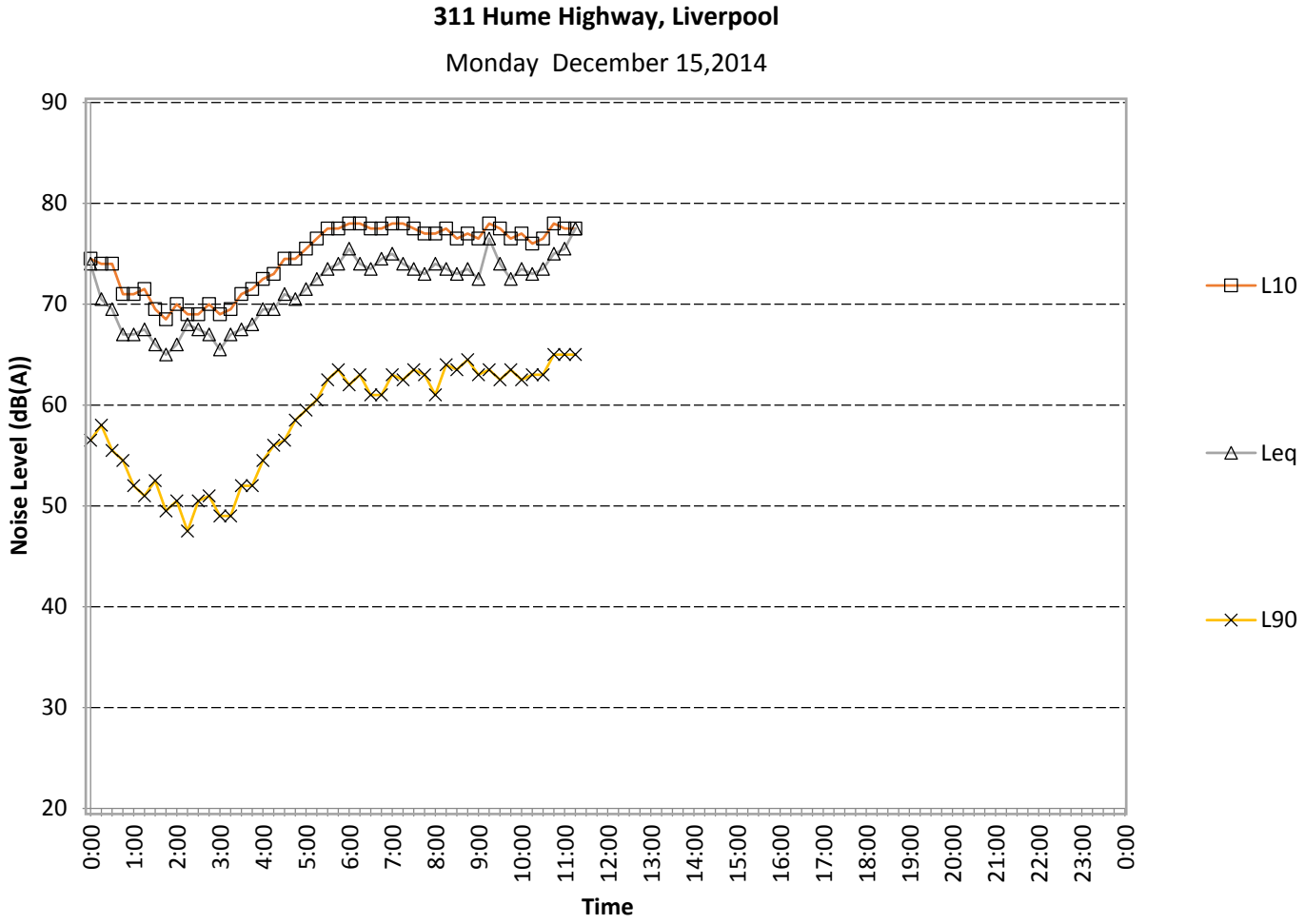
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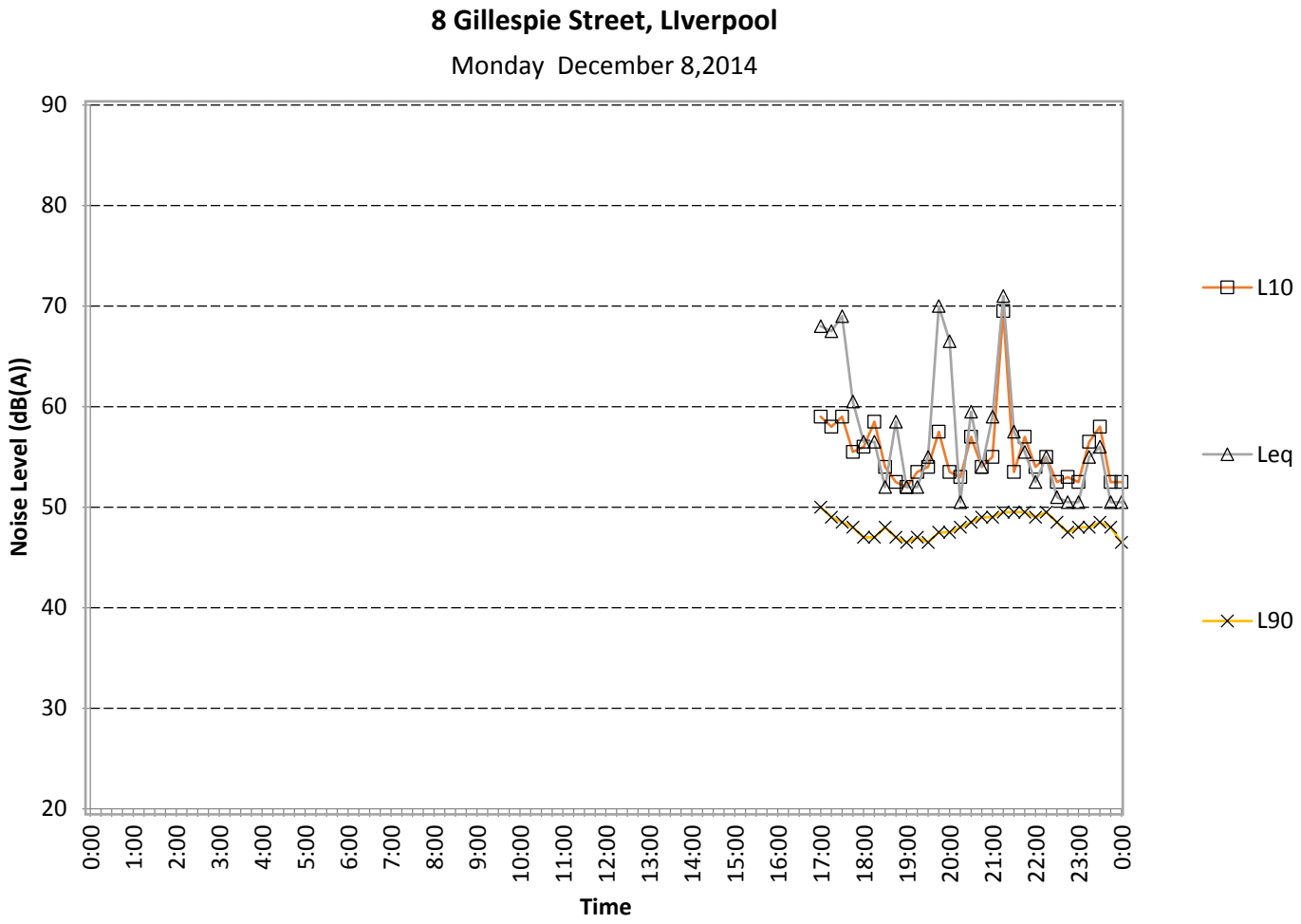
Appendix 2
Unattended Noise Measurements
Background Noise Levels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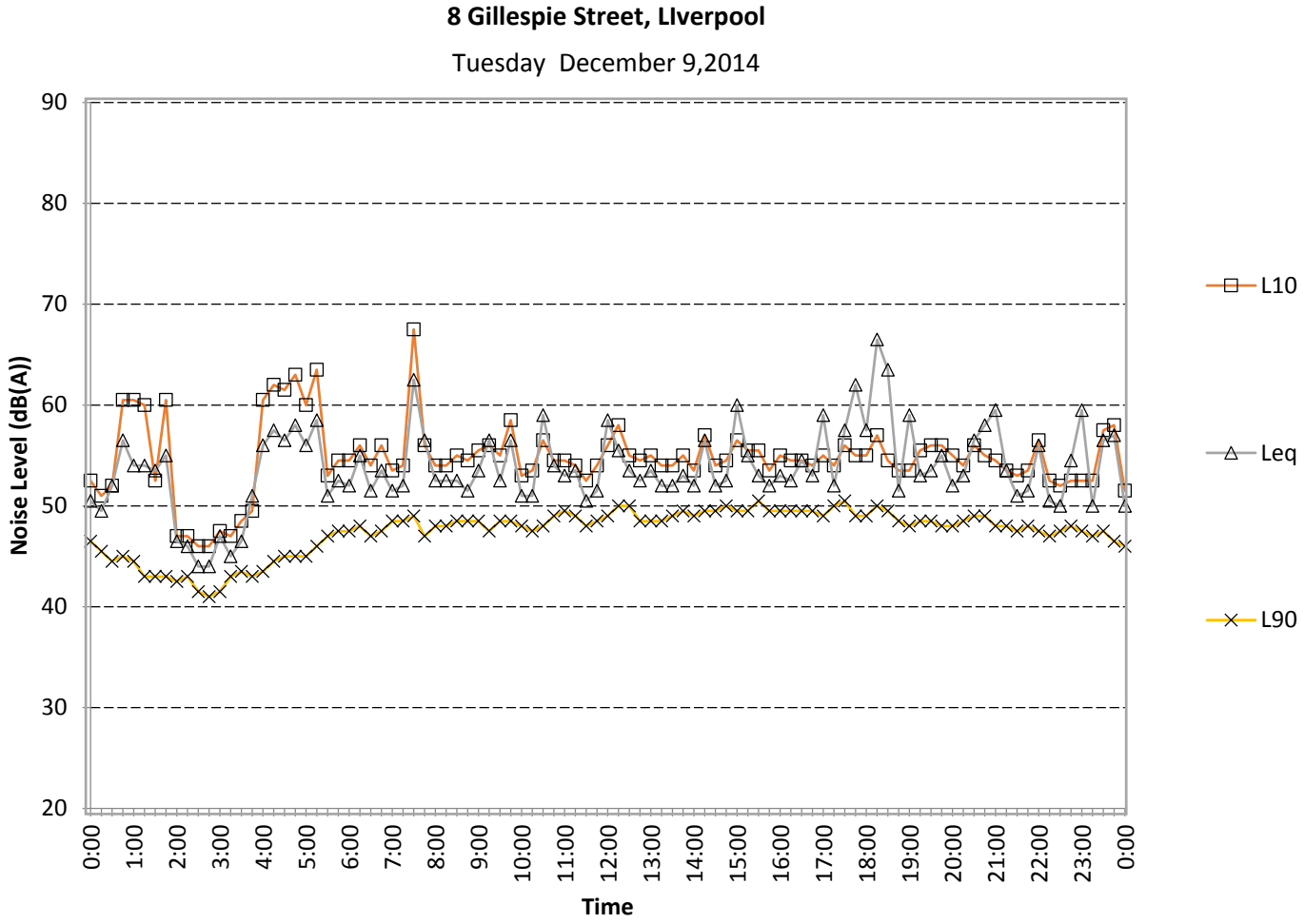
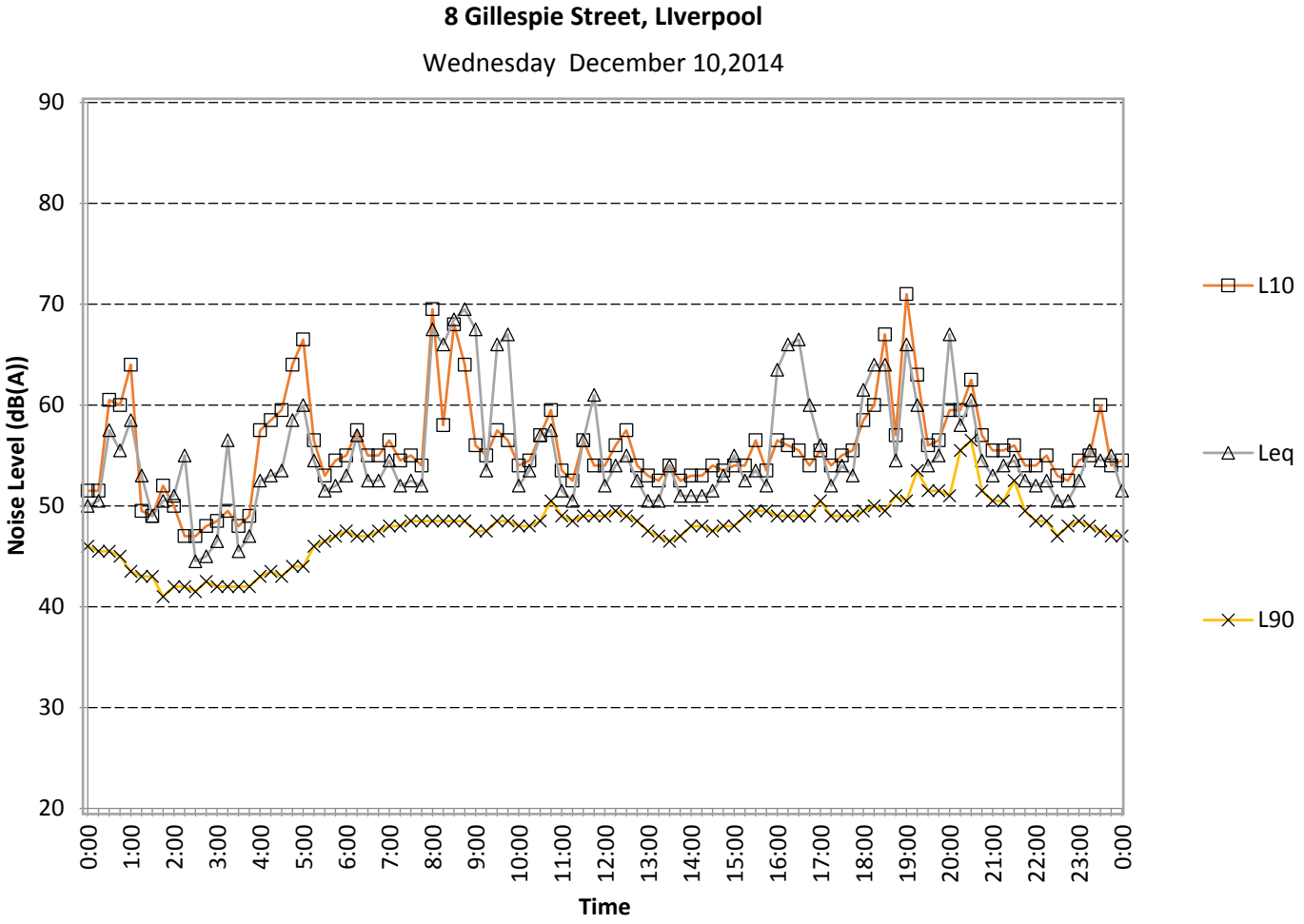
Leq
L90


8 Gillespie Street, LIverpool
Tuesday December 9,2014
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


8 Gillespie Street, LIverpool
Wednesday December 10,2014
Noise Level (dB(A))
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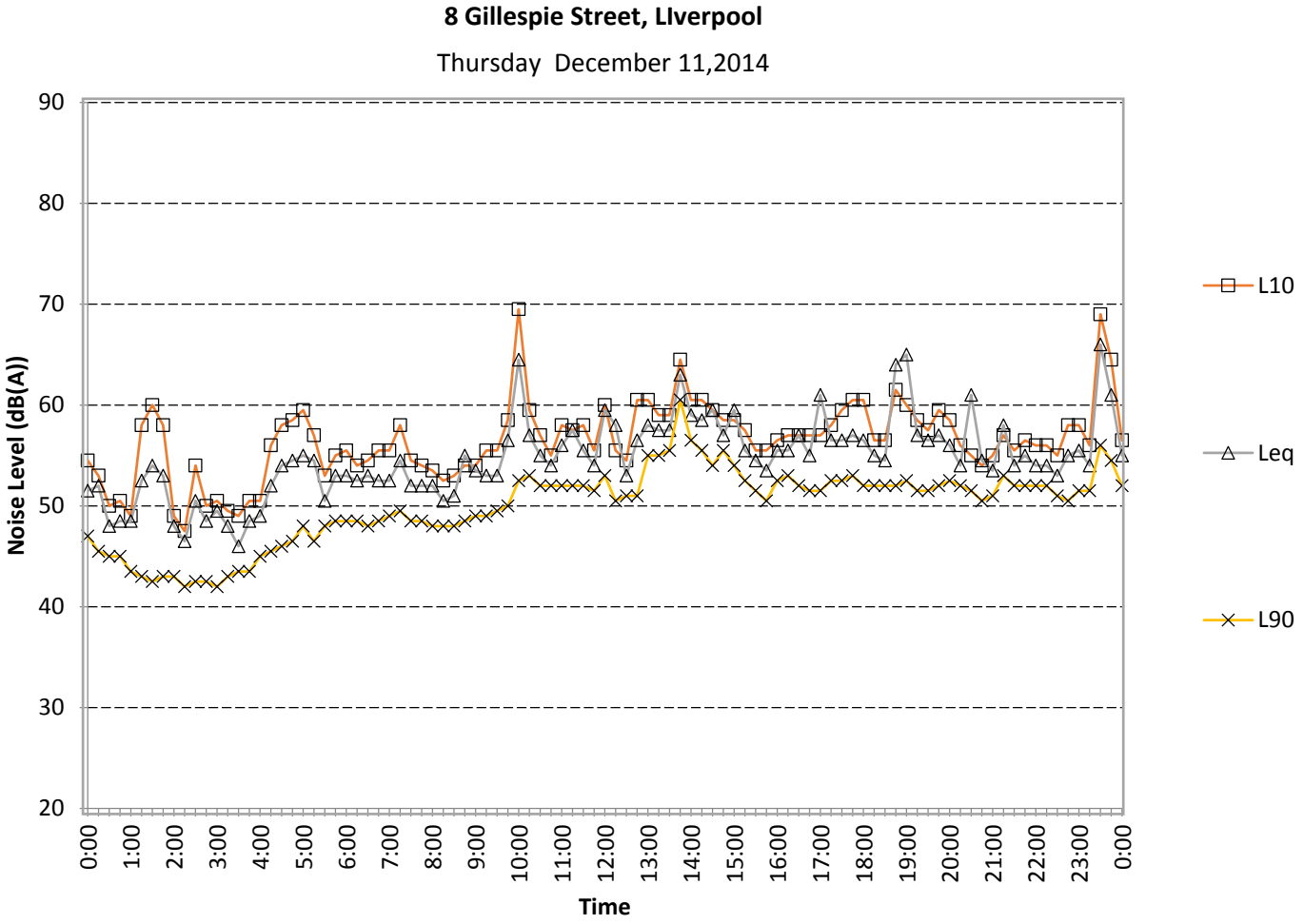
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


8 Gillespie Street, LIverpool
Thursday December 11,2014
Noise Level (dB(A))
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70
60
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30
20
0:00
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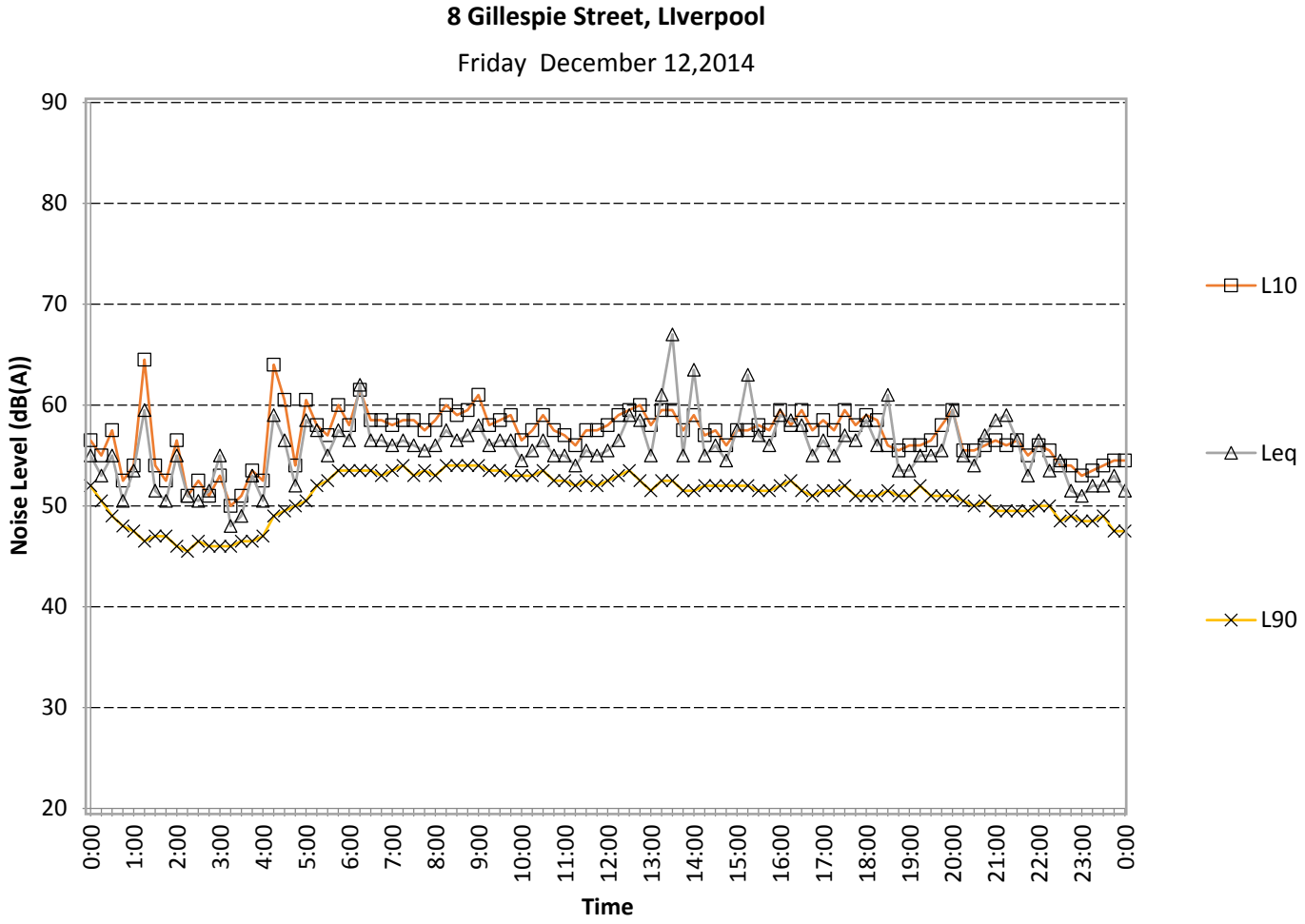
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


8 Gillespie Street, LIverpool
Friday December 12,2014
Noise Level (dB(A))
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0:00
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3:00
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15:00
16:00
17:00
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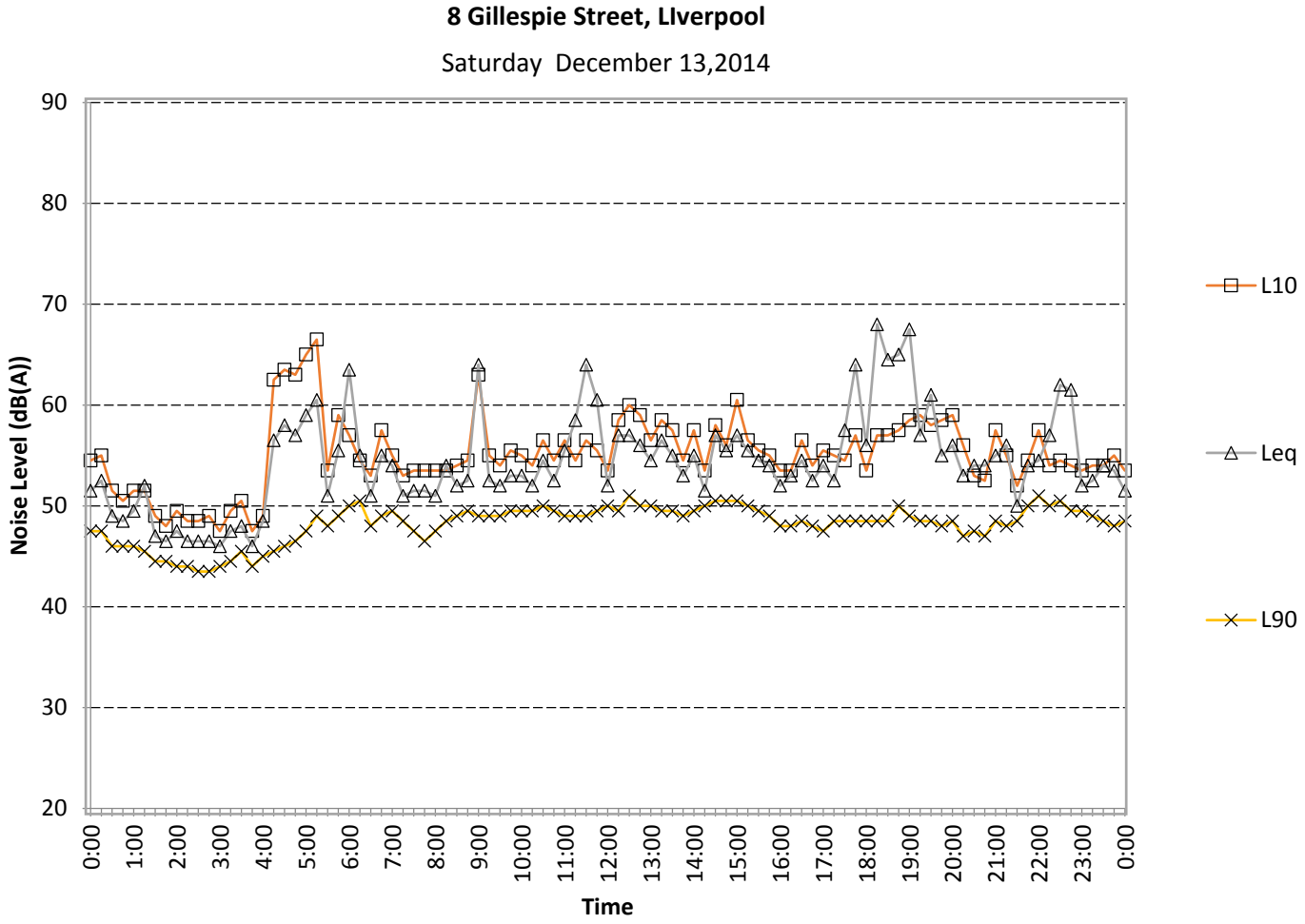
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


8 Gillespie Street, LIverpool
Saturday December 13,2014
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
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2:00
3:00
4:00
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13:00
14:00
15:00
16:00
17:00
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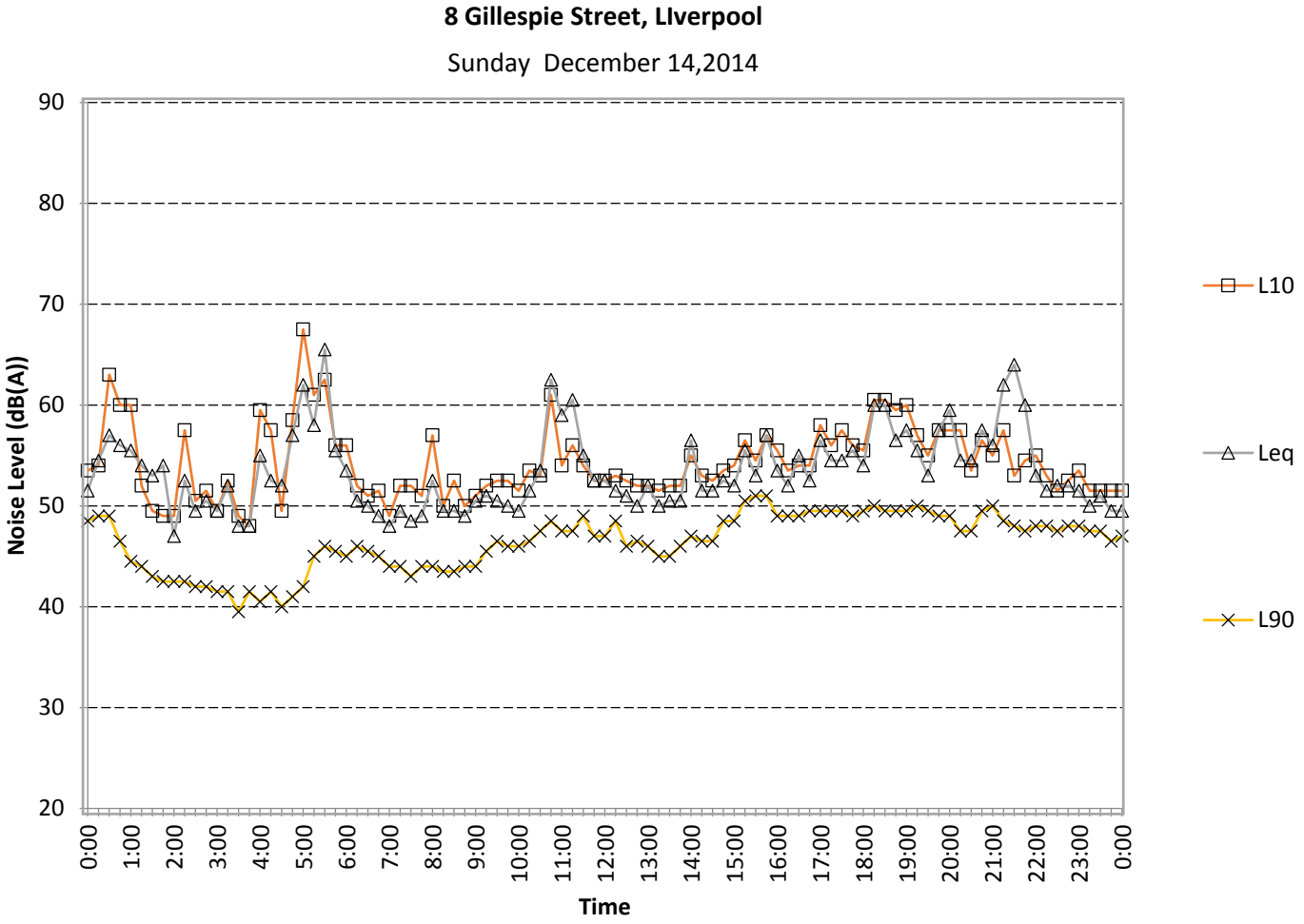
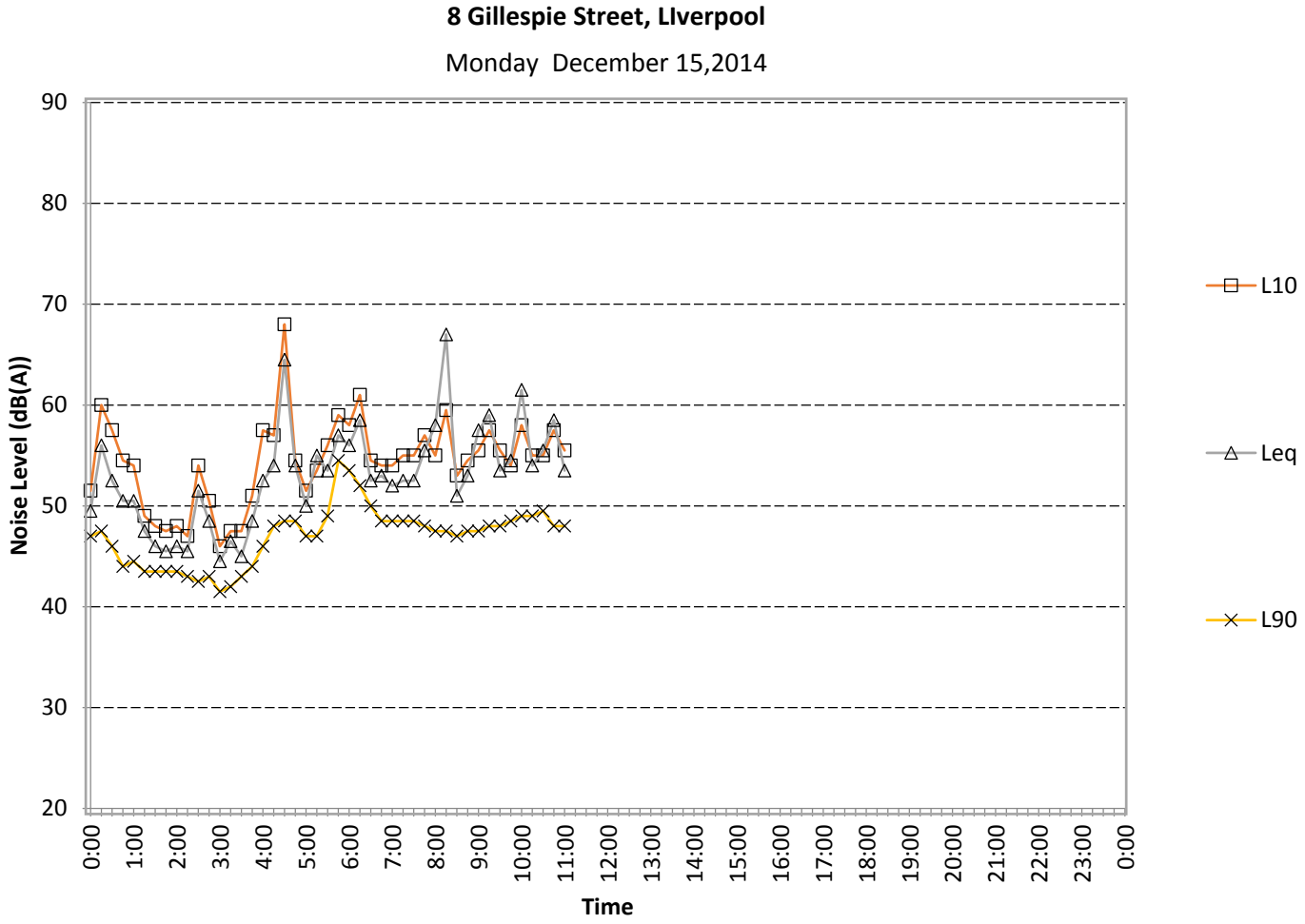
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


8 Gillespie Street, LIverpool
Sunday December 14,2014
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


8 Gillespie Street, LIverpool
Monday December 15,2014
Noise Level (dB(A))
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80
70
60
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40
30
20
0:00
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6:00
7:00
8:00
9:00
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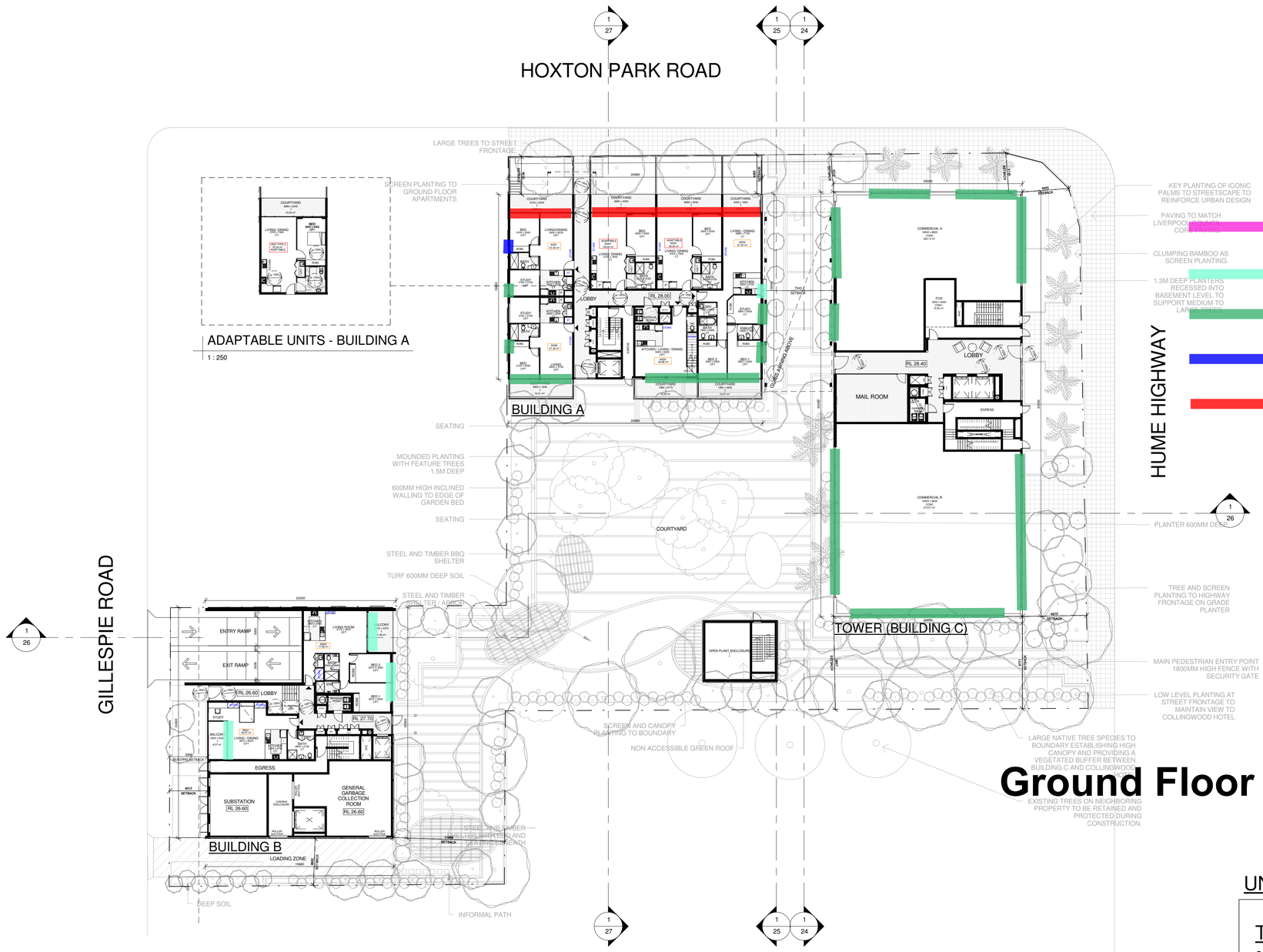
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90

Appendix 3
Glazing Markup

311 Hume Highway, Liverpool



Ground Floor Plan

GROUND FLOOR PLAN
1 : 250

UNIT BEDROOM NUMBERS

TOWER		BUILDING A	
2 BED	= 248	1 BED	= 11
	= 240	2 BED	= 11
		3 BED	= 15
			= 37
		BUILDING B	
		1 BED	= 8
		2 BED	= 8
		3 BED	= 14
			= 30

TOTAL UNITS = 307

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REF.	DATE	AMENDMENT
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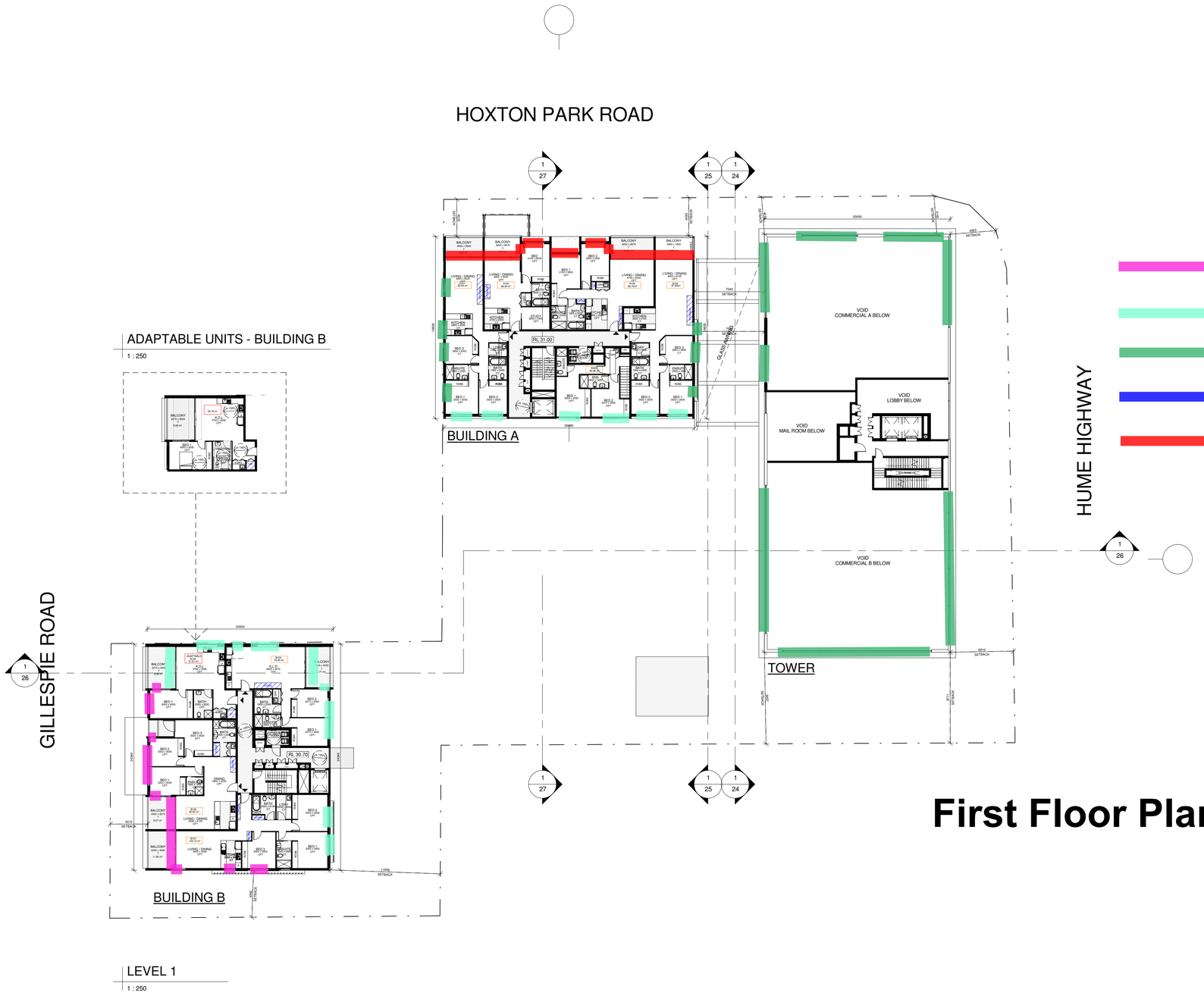
ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL
DRAWING NAME:	GROUND FLOOR PLAN
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	As indicated
QA:	RG, SG
PROJECT No.	1086
DWG No.	08 J

A1



6mm float

6.38mm laminated

10.38mm laminated

12.38mm laminated

Double Glazing
10.38mm / 100mm air-gap / 6mm float

First Floor Plan

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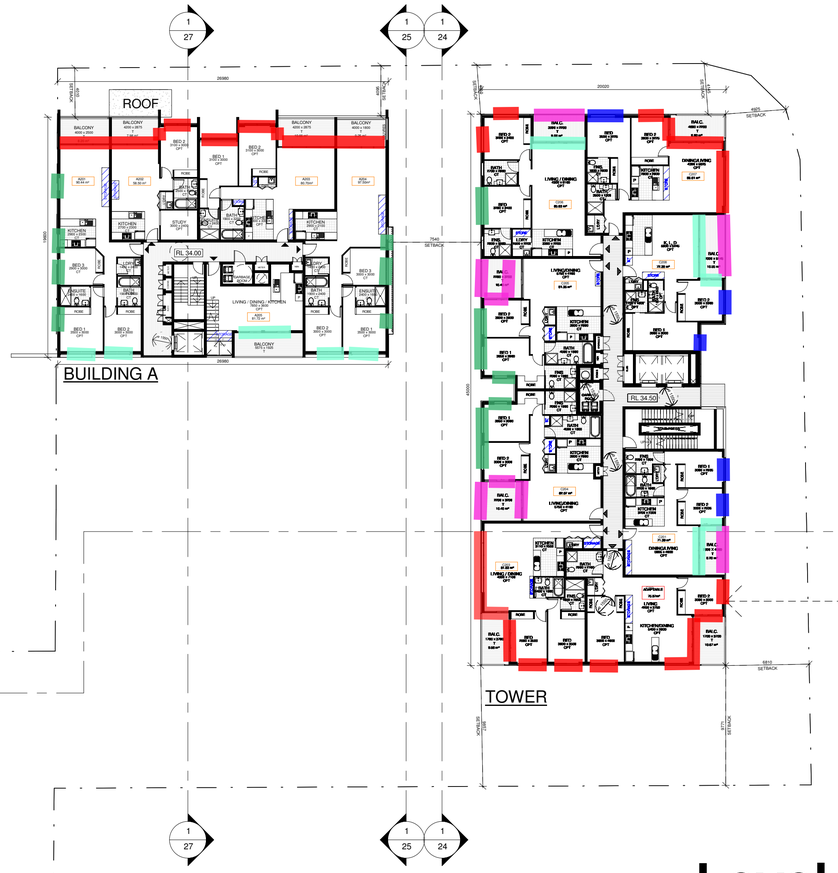
DRAWING NAME:	LEVEL 1

DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 250
QA:	RG, SG
PROJECT No.	1086
DWG No.	09 J

A1

HOXTON PARK ROAD



6mm float

6.38mm laminated

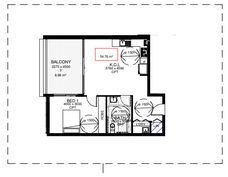
10.38mm laminated

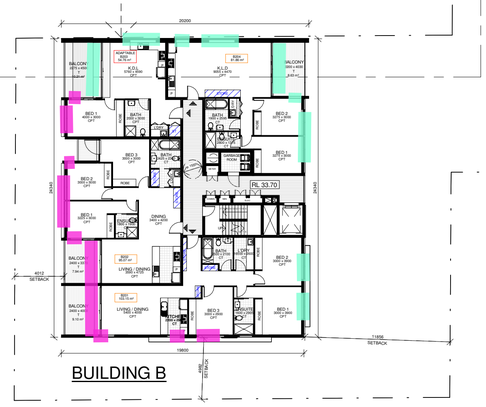
12.38mm laminated

Double Glazing
10.38mm / 100mm air-gap / 6mm float

ADAPTABLE UNITS - BUILDING B L2

1 : 250





LEVEL 2

1 : 250

ADAPTABLE UNITS - TOWER L2

1 : 250

Level 2

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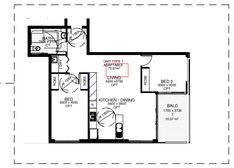
DRAWING NAME:	LEVEL 2
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 250
QA:	RG, SG
PROJECT No.	1086
DWG No.	10 J

A1

HOXTON PARK ROAD

ADAPTABLE UNITS - BUILDING B L3

1 : 250



ADAPTABLE UNITS - TOWER L3

1 : 250

6mm float

6.38mm laminated

10.38mm laminated

12.38mm laminated

Double Glazing
10.38mm / 100mm air-gap / 6mm float

Level 3

LEVEL 3

1 : 250

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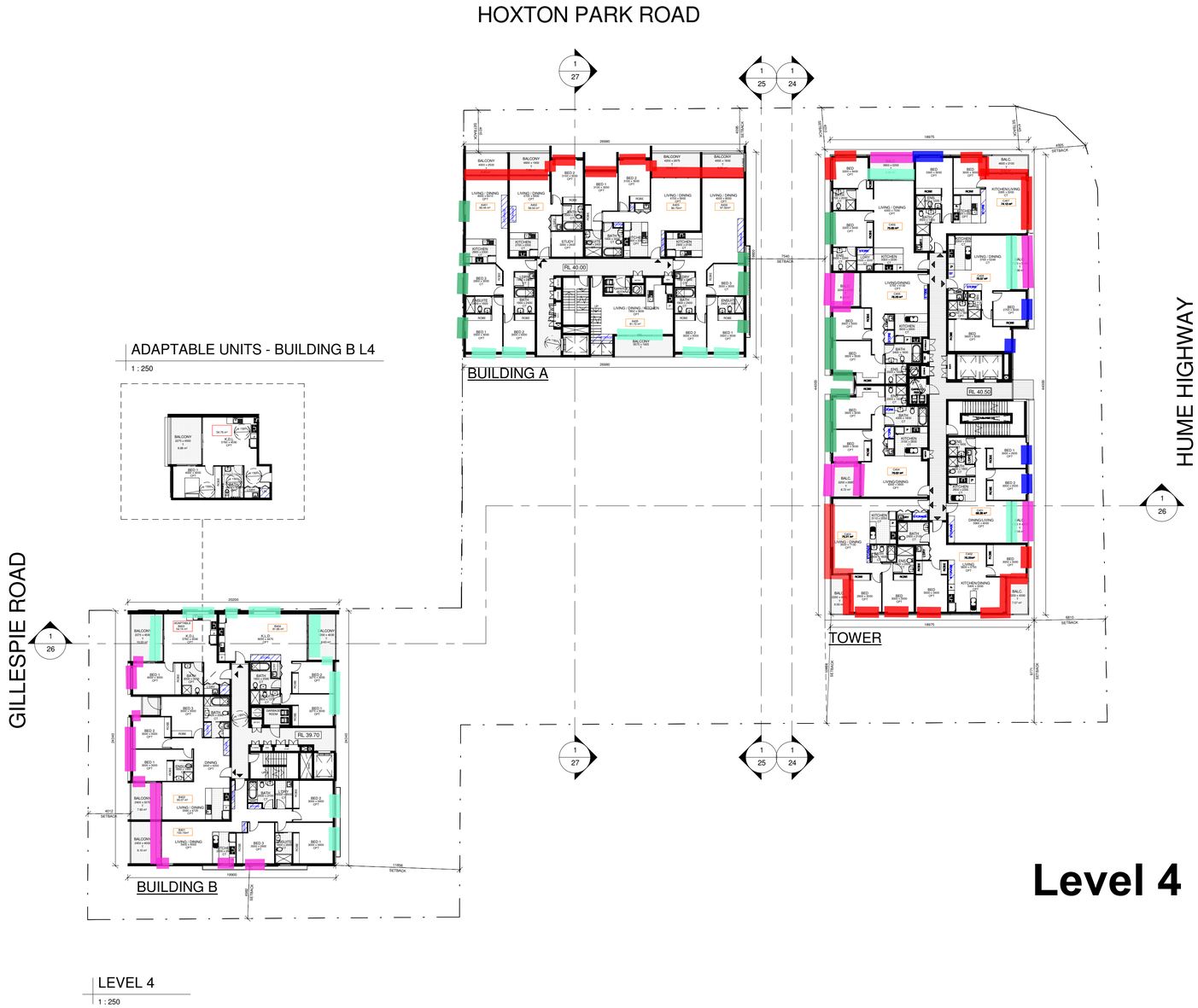
SCALE:	1 : 250
DRAWING NAME:	LEVEL 3
DATE:	DEC 14
DRAWN:	HD, KKC
QA:	RG, SG
PROJECT No.	1086
DWG No.	11 J

A1



Level 4

LEVEL 4
1 : 250

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DRAWING NAME:	LEVEL 4
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 250
QA:	Checker
PROJECT No.	1086
DWG No.	12 J

A1

HOXTON PARK ROAD

HUME HIGHWAY

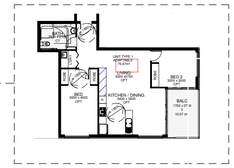
GILLESPIE ROAD

ADAPTABLE UNITS - BUILDING B L5

1 : 250

ADAPTABLE UNITS - TOWER L5

1 : 250



6mm float

6.38mm laminated

10.38mm laminated

12.38mm laminated

Double Glazing
10.38mm / 100mm air-gap / 6mm float

Level 5

LEVEL 5

1 : 250

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ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL	SCALE: 1 : 250	DWG No. 13 J
DRAWING NAME:	LEVEL 5	QA: Checker	

A1

Level 6

LEVEL 6
1 : 250

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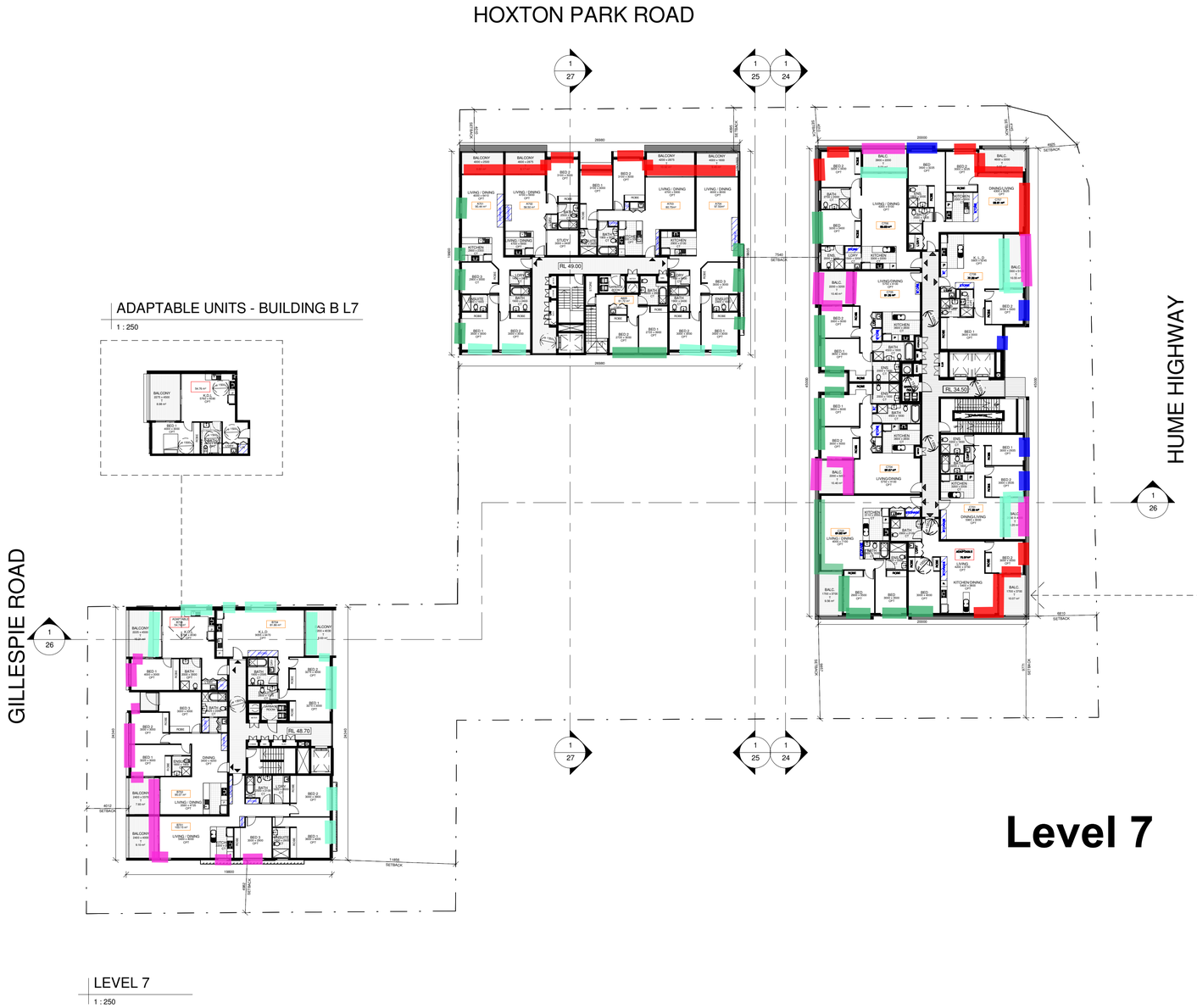
CLIENT:	HUME DEVELOPMENTS PTY LTD MIXED USE DEVELOPMENT	DATE:	DEC 14	PROJECT No.	1086
		DRAWN:	HD, KKC		
ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL	SCALE:	1 : 250	DWG No.	14 J
DRAWING NAME:	LEVEL 6	QA:	Checker		

A1



Level 7

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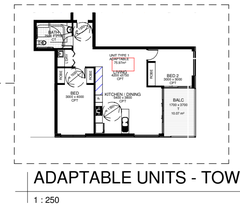
ADDRESS:	LOT NO, 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL	DRAWN: HD, KKC	DWG No. 15 J
DRAWING NAME:	LEVEL 7	SCALE: 1 : 250	
		QA: Checker	

A1

LEVEL 8
1 : 250



ADAPTABLE UNITS - TOWER L8
1 : 250

Level 8

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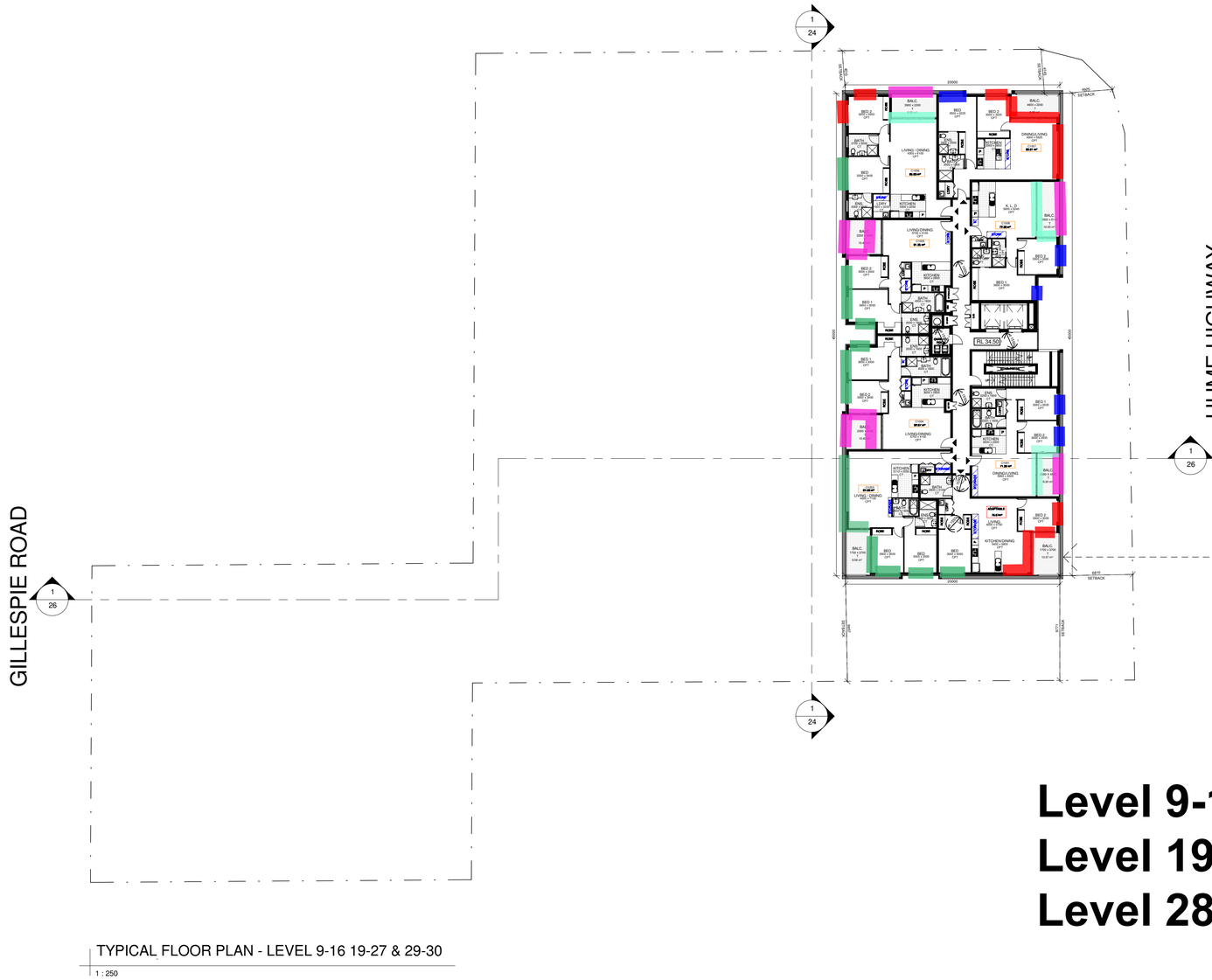
ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL
DRAWING NAME:	LEVEL 8
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 250
QA:	Checker
PROJECT No.	1086
DWG No.	16 J

A1



TYPICAL FLOOR PLAN - LEVEL 9-16 19-27 & 29-30

1 : 250

ADAPTABLE UNITS - TOWER L9

1 : 250

Level 9-16
Level 19-26
Level 28-29

DA ISSUE

REF.	DATE	AMENDMENT
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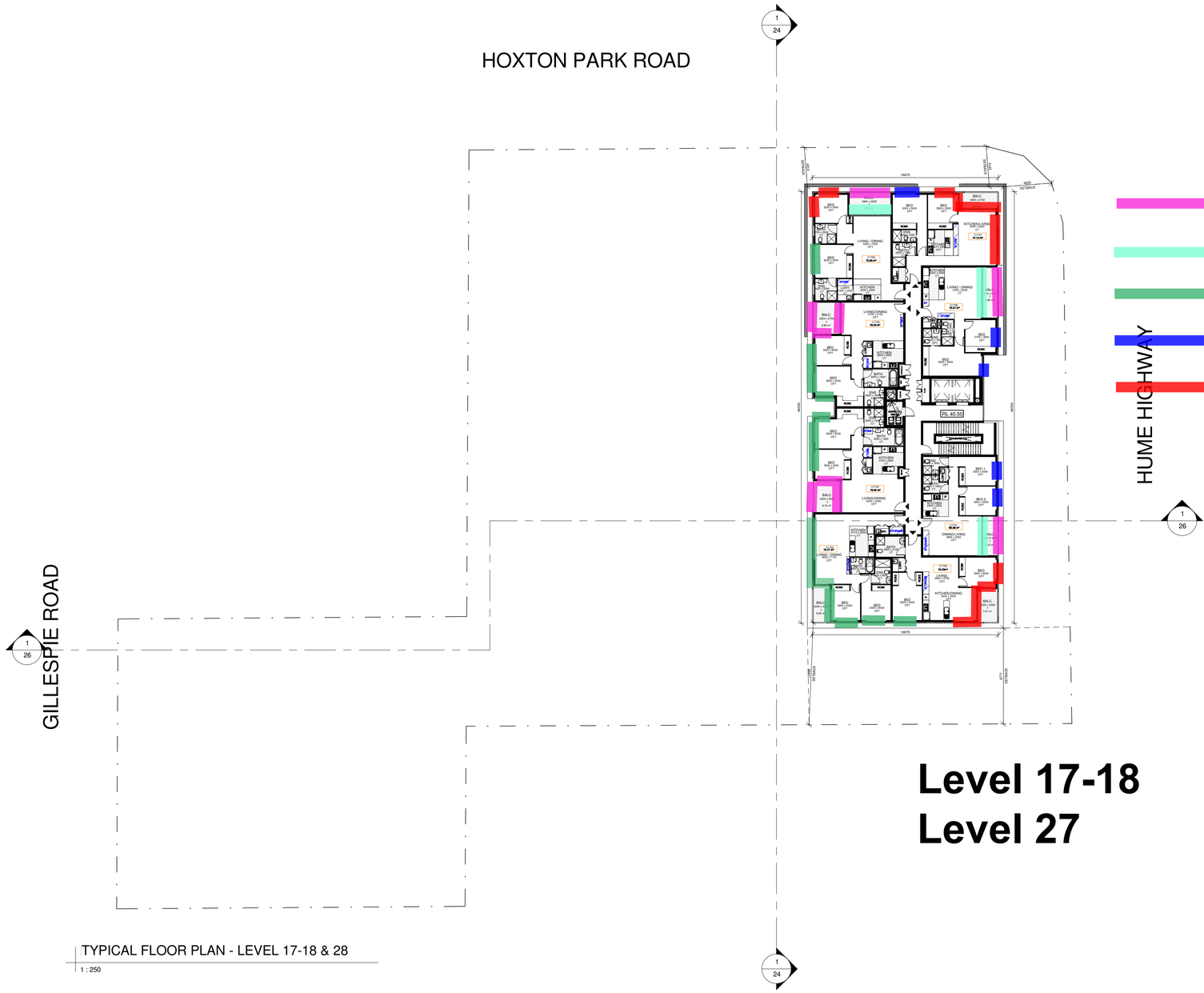
ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL
DRAWING NAME:	TYPICAL FLOOR PLAN - LEVEL 9-16, 19-26 & 28-28
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 250
QA:	Checker
PROJECT No.	1086
DWG No.	17 J

A1



Level 17-18
Level 27

TYPICAL FLOOR PLAN - LEVEL 17-18 & 28

1 : 250

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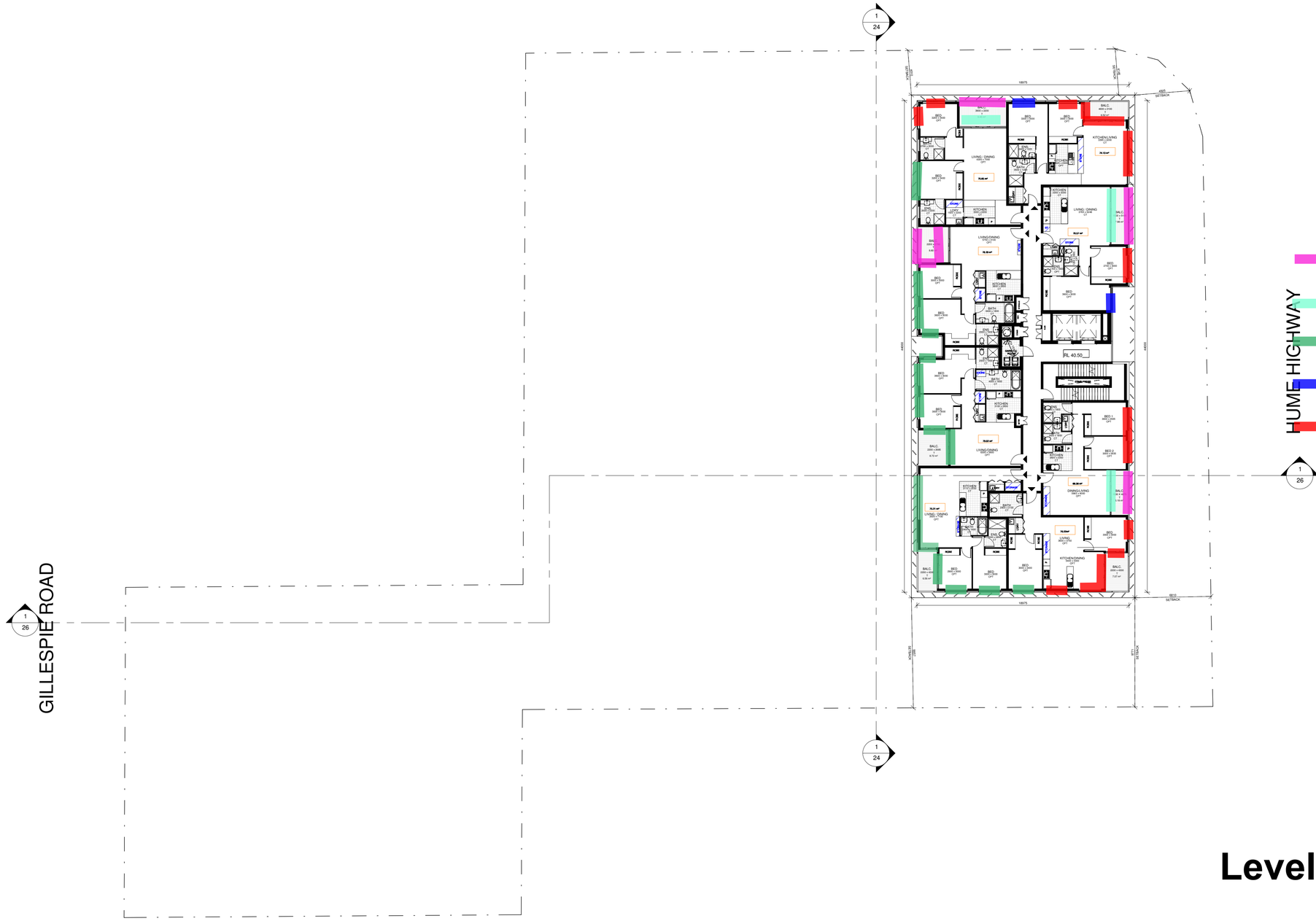
ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL
DRAWING NAME:	TYPICAL FLOOR PLAN - LEVEL 17-18 & 27
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 250
QA:	RG, SG
PROJECT No.	1086
DWG No.	18 J

A1

HOXTON PARK ROAD



Level 30-31

TYPICAL FLOOR PLAN - LEVEL 31 & 32

1 : 200

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CLIENT:	HUME DEVELOPMENTS PTY LTD
	MIXED USE DEVELOPMENT
ADDRESS:	LOT NO. 71 AND D.P 1004792 311 HUME HIGHWAY, LIVERPOOL
DRAWING NAME:	TYPICAL FLOOR PLAN - LEVEL 30 & 31
DATE:	DEC 14
DRAWN:	HD, KKC
SCALE:	1 : 200
QA:	Checker
PROJECT No.	1086
DWG No.	19 J

A1