



Forth Replacement Crossing

**Employer's Delivery Team
Construction Noise Monitoring Report**

**Principal Contract and M9J1a Contract
(November to December 2011)**

February 2012



An agency of  The Scottish Government



FORTH REPLACEMENT CROSSING

**EMPLOYER'S DELIVERY TEAM
CONSTRUCTION NOISE MONITORING REPORT
PRINCIPAL CONTRACT AND M9J1A CONTRACT
(NOVEMBER TO DECEMBER 2011)**

Revision Status

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FORTH REPLACEMENT CROSSING

**EMPLOYER'S DELIVERY TEAM
CONSTRUCTION NOISE MONITORING REPORT**

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REPORTS**

1. INTRODUCTION

- 1.1 This report sets out the results of the construction noise monitoring undertaken on the Forth Replacement Crossing project.
- 1.2 The noise monitoring periods covered in this report are as follows:
- Principal Contract: November 2011 to December 2011 – refer to Section 2 of this report.
 - M9 Junction 1a Contract: November 2011 to December 2011 – refer to Section 3 of this report.
- 1.3 Noise monitoring from the Fife ITS Contract for the period from November 2011 to December 2011 is available on the project website at <http://www.transportscotland.gov.uk/road/projects/forth-replacement-crossing/project-library/monitoring-reports/noise-and-vibration-reports>.

2. PRINCIPAL CONTRACT NOISE MONITORING

NOISE MONITORING LOCATIONS

2.1 Continuous noise monitoring was carried out at the fixed monitor locations in Table 2.1 below. The main construction activities carried out adjacent to the monitor locations are also listed.

Monitoring Location	Monitoring Period	Main Construction Activities
Tigh-Na-Grian	Nov 11 & Dec 11	Marine GI. Drilling, blasting and excavation at Beamer Rock.
Port Edgar	Dec 11	Marine GI. Drilling, blasting and excavation at Beamer Rock.
Butlaw Fisheries	Nov 11 & Dec 11	Marine GI. Drilling, blasting and excavation at Beamer Rock.
Inchgarvie Lodge	Nov 11 & Dec 11	Marine GI. Drilling, blasting and excavation at Beamer Rock.
Linn Mill	Nov 11 & Dec 11	November: Site Clearance, Access Points, LMA Fencing. December: Trial Jet Grouting, Haul Route, LMA Fencing, Site Compound.
Clufflat Brae	Nov 11 & Dec 11	November: Site Clearance, Access Points, LMA Fencing. December: Trial Jet Grouting, Haul Route, LMA Fencing, Site Compound.
Echline Field	Dec 11	November: Site Clearance, Access Points December: Site Clearance, Access Points
Dundas Home Farm	Dec 11	November: No Works. December: Site Clearance, Access Points, Haul routes to Structures at Dundas, Crossing Points at Structures at Dundas.

Table 2.1 Principal Contract – Long Term Monitoring Locations

NOISE MONITORING RESULTS

- 2.2 Monitoring results from the Principal contract are contained in Appendix A of this report. The results are presented in a report containing noise charts using the template contained in the Construction Noise Monitoring Information Note which is available on the project website at http://www.transportscotland.gov.uk/files/documents/projects/forth-replacement/FRC_Construction_Noise_Monitoring_Information_Note_2_.pdf.
- 2.3 The results of the construction noise monitoring provided in the Principal Contract report indicate that the monthly average total construction noise levels for daytime and evening periods were in accordance with the thresholds set out in the project Code of Construction Practice. Some exceedances of the monthly average total noise levels for night time periods occurred, although the exceedances are not due to construction works. The exceedances are due to consistently high baseline levels at that time.
- 2.4 Exceedances of the maximum noise level threshold occurred during November and December 2011. Following investigation of the exceedances it was determined that a total of seven exceedances were likely to be due to construction works. All seven exceedances were recorded at Clufflat Brae and were attributed to noise associated with the erection of and essential repair to the site boundary fence following a period of high winds.
- 2.5 All other exceedances of the maximum noise thresholds are not considered to be due to construction works being carried out.
- 2.6 As outlined above, the adverse weather conditions experienced in November and December 2011 led to a large quantity of non-construction related exceedance reports being generated, and as such it was considered inappropriate to include them in this report. However, the exceedance reports are available on request from the FRC Team, contactable via email at enquiries@forthreplacementcrossing.info. A summary of the information included in the exceedance reports is provided in Table 2.2 below.

Monitoring Location	Contractor's NVIR No's	Exceedance
Butlaw Fisheries (Nov 11)	1-25	During November the maximum noise threshold was exceeded on 25 occasions (daytime, 9; evening, 5; night time, 11). No exceedances were due to construction related activities. Investigations found device installation and adverse weather conditions to be explanatory factors.
Butlaw Fisheries (Dec 11)	26-48	During December the maximum noise threshold was exceeded on 23 occasions (daytime, 6; evening, 4; night time, 13). No exceedances were due to construction related activities. Adverse weather conditions during December accounted for many of these exceedances, with traffic noise also causing exceedances.
Clufflat Brae (Nov 11)	1-21	During November the maximum noise threshold was exceeded on 21 occasions (daytime, 7; evening, 5; night time, 9). Three of the daytime exceedances during this period were attributed to intermittent construction noise, which occurred during the construction of the site boundary fence adjacent to the monitor. However, no other exceedances were attributed to construction noise and were found to be largely the result of device maintenance and adverse weather conditions.
Clufflat Brae (Dec 11)	22-41	During December the maximum noise threshold was exceeded on 20 occasions (daytime, 9; evening, 2; night time, 9). Four of the daytime exceedances during this period were attributed to intermittent construction noise, which occurred during the construction of the site boundary fence adjacent to the monitor and repairs to the fence following adverse weather conditions. However, no other exceedances were due to construction, with exceedances found to be a result of device maintenance and adverse weather conditions.
Inchgarvie Lodge (Nov 11)	1-30	During November the maximum noise threshold was exceeded on 30 occasions (daytime, 17; evening, 5; night time, 8). No exceedances were caused by construction works. Exceedances were attributed to device maintenance, adverse weather conditions and vehicles at the property.
Inchgarvie Lodge (Dec 11)	31-39	During December the maximum noise threshold was exceeded on 9 occasions (daytime, 2; evening, 1; night time, 6). Exceedances were due to non-construction factors and were attributed to adverse weather conditions in the area throughout December.
Linn Mill (Nov 11)	1-21	During November the maximum noise threshold was exceeded on 21 occasions (daytime, 10;

Monitoring Location	Contractor's NVIR No's	Exceedance
		evening, 4; night time, 7). The exceedances were not related to construction and were attributed to adverse weather conditions and device maintenance.
Linn Mill (Dec 11)	22-37	During December the maximum noise threshold was exceeded on 16 occasions (daytime, 3; evening, 3; night time, 10). Exceedances were not due to construction noise and were found to be due to windy conditions during December and device maintenance.
Tigh-Na-Grian (Nov 11)	1-12 (+31)	During November the maximum noise threshold was exceeded on 13 occasions (daytime, 9; night time 4). Due to water damage from adverse weather conditions causing device error the audio and weather data were not available for this location. However, construction works were not believed to have resulted in the exceedances occurring during this period. It is likely that the exceedances occurred as a result of adverse weather conditions and other existing noise sources.
Tigh-Na-Grian (Dec 11)	13-30	During December the maximum noise threshold was exceeded on 18 occasions (daytime, 7; night time 11). As with November, audio recordings and weather data were lost as a result of water damage to the monitoring device. However, construction works were not believed to have resulted in the exceedances occurring during this period. It is likely that the exceedances occurred as a result of adverse weather conditions during this period, as were experienced at other locations and other existing noise sources.
Dundas Home Farm (Dec 11)	1-6	During December the maximum noise threshold was exceeded on 6 occasions. No exceedances were due to construction related activities. Exceedances were caused as a result of adverse weather conditions during December and the call of a bird.
Echline Field (Dec 11)	1-10	During January the maximum noise threshold was exceeded on 11 occasions. Exceedances have not been attributed to construction as investigations demonstrate that exceedances occurred as a result of existing traffic noise on the adjacent road and adverse weather conditions.

Table 2.2 Principal Contract – Summary of Noise Threshold Exceedances

3. M9 J1A CONTRACT NOISE MONITORING

NOISE MONITORING LOCATIONS

- 3.1 Continuous noise monitoring was carried out at the fixed monitor locations in Table 3.1 below. The main construction activities carried out adjacent to the monitor locations are also listed.

Monitoring Location	Monitoring Period	Main Construction Activities
93/95 King Edwards Way	Nov 11	Site clearance works, construction of haul road and removal of existing road restraint system along westbound verge of M9.
15-17 Buie Rigg	Nov 11	Breaking and excavation of rock east of M9 overbridge, construction of haul route in vicinity site compound area and tree felling.
8 Kirklands Park Grove	Nov 11	Site clearance works and construction of access ramp.
93/95 King Edwards Way	Dec 11	Site clearance works and construction of access route along mainline.
15-17 Buie Rigg	Dec 11	Works to accommodate sheet piling to west of Newmains Bridge and transportation of materials.
8 Kirklands Park Grove	Dec 11	CFA pile testing, construction of access ramp east of M9 Spur and sheet piling works at Newmains Bridge.
15-17 Buie Rigg and 8 Kirklands Park Grove	Dec 11 (night)	Installation of varioguard barrier and road marking works.

Table 3.1 M9 J1a Contract – Long Term Monitoring Locations

NOISE MONITORING RESULTS

- 3.2 Monitoring results from the M9 Junction 1a contract are contained in Appendix B of this report. The results are presented in charts using the template contained in the Construction Noise Monitoring Information Note which is available on the project website at http://www.transportscotland.gov.uk/files/documents/projects/forth-replacement/FRC_Construction_Noise_Monitoring_Information_Note_2_.pdf.
- 3.3 The results of the construction noise monitoring provided in the M9 Junction 1a reports indicate that all construction activities were carried out in accordance with the thresholds set out in the project Code of Construction Practice with the exception of once exceedance of the maximum noise level threshold recorded at both Buie Rigg and Kirklands Park Grove in December 2011. Following analysis of the exceedance

it is considered that the exceedance was likely to be construction related and may have been as a result of unauthorised starting up of machinery by a sub-contractor. Corrective action taken by the contractor following this incident includes ensuring that all personnel are aware of the plant permitted to be used on each new task through pre-task briefings.

3.4 All other exceedances of the maximum noise thresholds are not considered to be due to construction works being carried out. Formal exceedance reports were prepared by the contractor for November and December 2011 and the investigations identified that the exceedances were not due to construction related factors. Summary information regarding the exceedances of the maximum noise level thresholds are provided In Table 2.2 below. Copies of the exceedance reports are contained in Appendix B to this report.

Contractor's Report Ref.	Monitoring Location	Exceedance
NER 07	93/95 King Edwards Way	Maximum noise level threshold exceeded on 25 occasions during November 2011. Analysis determined that the exceedances were unlikely to be construction related and were attributed to high wind speeds combined with heavy rainfall and existing traffic noise.
NER 08	15-17 Buie Rigg	Maximum noise level threshold exceeded on 2 occasions during November 2011. Analysis determined that the exceedances were unlikely to be construction related and were attributed heavy rainfall.
NER 09	8 Kirklands Park Grove	Maximum noise level threshold exceeded on 7 occasions during November 2011. Analysis determined that the exceedances were unlikely to be construction related and were attributed to high wind speeds combined with heavy rainfall and existing traffic noise.
NER 10	93/95 King Edwards Way	Maximum noise level threshold exceeded on 18 occasions during December 2011. Analysis determined that the exceedances were unlikely to be construction related and were attributed to high wind speeds combined with heavy rainfall and existing traffic noise.
NER 11	15-17 Buie Rigg	Maximum noise level threshold exceeded on 5 occasions during December 2011. Analysis determined

Contractor's Report Ref.	Monitoring Location	Exceedance
		that the exceedances were unlikely to be construction related and were attributed to heavy rain and wind noise.
NER 12	8 Kirklands Park Grove	Maximum noise level threshold exceeded on 9 occasions during December 2011. Analysis determined that the exceedances were unlikely to be construction related and were attributed to high wind speeds combined with heavy rainfall and existing traffic noise.
NER 13	15-17 Buie Rigg and 8 Kirklands Park Grove (night)	Maximum noise level threshold exceeded on 1 occasion at both Buie Rigg and Kirklands Park Grove during night time works in December 2011. Analysis determined that the exceedance was likely to be construction related and may have been as a result of unauthorised starting up of machinery by a sub-contractor.

Table 3.2 M9 J1a Contract – Summary of Noise Threshold Exceedances

APPENDIX A -

**PRINCIPAL CONTRACT - CONSTRUCTION
NOISE MONITORING REPORTS**



Contractor



Forth Crossing Bridge Constructors

HOCHTIEF Solutions
American Bridge International
DRAGADOS
Morrison Construction

Project **FORTH REPLACEMENT CROSSING**

Document title

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NOVEMBER AND DECEMBER 2011**

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American Bridge International
DRAGADOS
Morrison Construction

Distribution

Name	Email Address	Copy Sent (Y/N)
Carlo Germani	Carlo.germani@fbcjv.co.uk	
Victor Jimenez	Victor.jimenez@fbcjv.co.uk	
Thomas Nilsson	Thomas.nilsson@fbcjv.co.uk	
Scott Chalmers	scott.chalmers@fbcjv.co.uk	
Antonio Vazquez	Antonio.vazquez@fbcjv.co.uk	
Jim Watson	Jim.Watson@fbcjv.co.uk	
Meinolf Droste	meinolf.droste@fbcjv.co.uk	
Ruben Casanova	Ruben.casanova@fbcjv.co.uk	
Carson Carney	Carson.carney@fbcjv.co.uk	
Derek Chambers	Derek.Chambers@fbcjv.co.uk	
Christian Dabringhaus	Christian.Dabringhaus@fbcjv.co.uk	
Document Control	Tracy.odonnell@fbcjv.co.uk	

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1 Introduction

1.1 This report presents the construction noise monitoring results acquired for construction works associated with the main crossing and related network. The following periods will be covered in this report:

- November 2011
- December 2011

1.2 Monitoring of construction noise has been undertaken in accordance with the Code of Construction Practice (CoCP) and the Noise and Vibration Management Plan (NVMP).

2 Noise Monitoring Locations

- 2.1** During November 2011 and December 2011 construction noise has been monitored using permanent, continuous noise monitoring devices at the locations listed in Table 1. The installation of the monitors at these locations did not occur simultaneously, thus the monitoring periods covered by each location varies and has been stated in Table 1.
- 2.2** At some monitoring locations, the noise monitoring devices are accompanied by an associated weather station. Weather stations are present at Echline Field, Tigh-Na-Grian, Clufflat Brae, Dundas Home Farm and Butlaw Fisheries.

Table 1: Monitoring Locations

Ref.	Monitoring Location	Monitoring Periods	Main Construction Activities
M3	Tigh-Na-Grian	Nov 2011 and Dec 2011	Marine GI. Drilling, blasting and excavation at Beamer Rock.
M6	Port Edgar	Dec 2011	Marine GI. Drilling, blasting and excavation at Beamer Rock.
M7	Butlaw Fisheries	Nov 2011 and Dec 2011	Marine GI. Drilling, blasting and excavation at Beamer Rock.
M10	Inchgarvie Lodge	Nov 2011 and Dec 2011	Marine GI. Drilling, blasting and excavation at Beamer Rock.
M11	Linn Mill	Nov 2011 and Dec 2011	<i>November:</i> Site Clearance, Access Points, LMA Fencing. <i>December:</i> Trial Jet Grouting, Haul Route, LMA Fencing, Site Compound.
M13	Clufflat Brae	Nov 2011 and Dec 2011	<i>November:</i> Site Clearance, Access Points, LMA Fencing. <i>December:</i> Trial Jet Grouting, Haul Route, LMA Fencing, Site Compound.
M15	Echline Field	Dec 2011	<i>November:</i> Site Clearance, Access Points <i>December:</i> Site Clearance, Access Points N.B. No evening or night time construction in vicinity.
M17	Dundas Home Farm	Dec 2011	<i>November:</i> No Works. <i>December:</i> Site Clearance, Access Points, Haul routes to BP Structures, Crossing Points at BP Structure. N.B. No evening or night time construction in vicinity.

3 Noise Monitoring Results

3.1 All noise monitoring results for construction days have been presented in charts using the template provided in the Construction Noise Monitoring Information Note, as available on the project website (http://www.transportscotland.gov.uk/files/documents/projects/forth-replacement/FRC_Construction_Noise_Monitoring_Information_Note_2_.pdf). All charts can be found in the appendices of this report.

3.2 With regard to the noise monitoring results charts, the following should be noted:

- Noise data for days, evening and nights on which no construction works were conducted have been excluded from the results.
- As set out in the CoCP, the assessment time for evening and nights is 1 hour periods. To present the construction noise results for these periods, therefore, the maximum $L_{Amax, F}$ (fast time response) and maximum L_{Aeq} within the overall evening/night time period has been taken.
- Where noise data is missing for days, evening or nights during which construction works were conducted, this has been indicated. Missing data is a result of device error. Device errors have typically been a result of the following:
 - Adverse weather conditions causing physical damage to the monitoring equipment;
 - Continually high noise levels (such as during high winds) causing the monitors to repeatedly trigger noise recordings and the memory becoming full, leading to a failure to record further noise data;
 - Other software issues.

- 3.3** Results demonstrate that the monthly average total construction noise threshold has not been exceeded for any of the monitoring locations during daytime and evening periods for November or December. Monthly average total construction noise thresholds are shown as being exceeded during night times in November and December at certain monitoring locations (November: Butlaw Fisheries, Clufflat Brae, Inchgarvie Lodge and Linn Mill; December: Butlaw Fisheries, Clufflat Brae, Linn Mill and Tigh-Na-Grian). The presentation of the data assumes that the pre-construction ambient noise levels occur throughout the construction period as it is not possible to separate the construction and background noise levels from the monitored noise. However, the exceedances of the monthly average threshold were affected by long spells of adverse weather conditions during the months of November and December, at times when construction works were being undertaken. As a result, the exceedances are not attributed to construction works; they are due to the background noise levels being significantly higher than normal.
- 3.4** Additionally, exceedances of the maximum noise thresholds also occurred within these periods. Each occurrence of an exceedance was investigated using live calls to the device, triggered audio recordings, records of construction works (i.e. site diaries) and analysis of weather station data. Where the wind speed was found to be greater than 5 meters per second (m/s), this was deemed to be a contributing factor to noise level threshold exceedances. Noise and Vibration Investigative Reports (NVIRs) have been produced for each exceedance, detailing the results of the investigation.
- 3.5** Exceedance reports demonstrate that on seven occasions an exceedance of the maximum noise level threshold was likely to be attributed to construction noise. Each of these exceedances were recorded at Clufflat Brae and were due to intermittent construction noise during the erection of and repairs (following storm conditions) to the site boundary fence which is immediately adjacent to the noise monitor at this location. These exceedance events were investigated and it was not deemed necessary to stop the construction works. The short-term works were essential and there was no mitigation which could have been implemented to avoid the exceedances of the threshold.
- 3.6** The majority of exceedances of the maximum noise level thresholds, however, occurred as a result of non-construction related noise. Adverse weather conditions, in particular wind, were found to be a significant contributor to maximum noise level exceedances. Additionally, at some locations, notably Echline Field, existing traffic noise had an effect on maximum noise levels during the periods covered in this report. This impact was exacerbated during periods of wet weather when the road surface was wet, thus increasing noise levels of passing traffic. A summary of the findings for exceedances occurring at each of the locations can be found in Table 2.

Table 2: Summary of Exceedances at Monitoring Locations

Monitoring Location	Associated NVIR Numbers	Monitoring Period	Summary of Exceedance Details
Butlaw Fisheries	1-25	November 2011	During November the maximum noise threshold was exceeded on 25 occasions (daytime, 9; evening, 5; night time, 11). No exceedances were due to construction related activities. Investigations found device installation and adverse weather conditions to be explanatory factors.
	26-48	December 2011	During December the maximum noise threshold was exceeded on 23 occasions (daytime, 6; evening, 4; night time, 13). No exceedances were due to construction related activities. Adverse weather conditions during December accounted for many of these exceedances, with traffic noise also causing exceedances.
Clufflat Brae	1-21	November 2011	During November the maximum noise threshold was exceeded on 21 occasions (daytime, 7; evening, 5; night time, 9). Three of the daytime exceedances during this period were attributed to intermittent construction noise, which occurred during the construction of the site boundary fence adjacent to the monitor. However, no other exceedances were attributed to construction noise and were found to be largely the result of device maintenance and adverse weather conditions.
	22-41	December 2011	During December the maximum noise threshold was exceeded on 20 occasions (daytime, 9; evening, 2; night time, 9). Four of the daytime exceedances during this period were attributed to intermittent construction noise, which occurred during the construction of the site boundary fence adjacent to the monitor and repairs to the fence following adverse weather conditions. However, no other exceedances were due to construction, with exceedances found to be a result of device maintenance and adverse weather conditions.

Inchgarvie Lodge	1-30	November 2011	During November the maximum noise threshold was exceeded on 30 occasions (daytime, 17; evening, 5; night time, 8). No exceedances were caused by construction works. Exceedances were attributed to device maintenance, adverse weather conditions and vehicles at the property.
	31-39	December 2011	During December the maximum noise threshold was exceeded on 9 occasions (daytime, 2; evening, 1; night time, 6). Exceedances were due to non-construction factors and were attributed to adverse weather conditions in the area throughout December.
Linn Mill	1-21	November 2011	During November the maximum noise threshold was exceeded on 21 occasions (daytime, 10; evening, 4; night time, 7). The exceedances were not related to construction and were attributed to adverse weather conditions and device maintenance.
	22-37	December 2011	During December the maximum noise threshold was exceeded on 16 occasions (daytime, 3; evening, 3; night time, 10). Exceedances were not due to construction noise and were found to be due to windy conditions during December and device maintenance.
Tigh-Na-Grian	1-12 (+31)	November 2011	During November the maximum noise threshold was exceeded on 13 occasions (daytime, 9; night time 4). Due to water damage from adverse weather conditions causing device error the audio and weather data were not available for this location. However, construction works were not believed to have resulted in the exceedances occurring during this period. It is likely that the exceedances occurred as a result of adverse weather conditions and other existing noise sources.



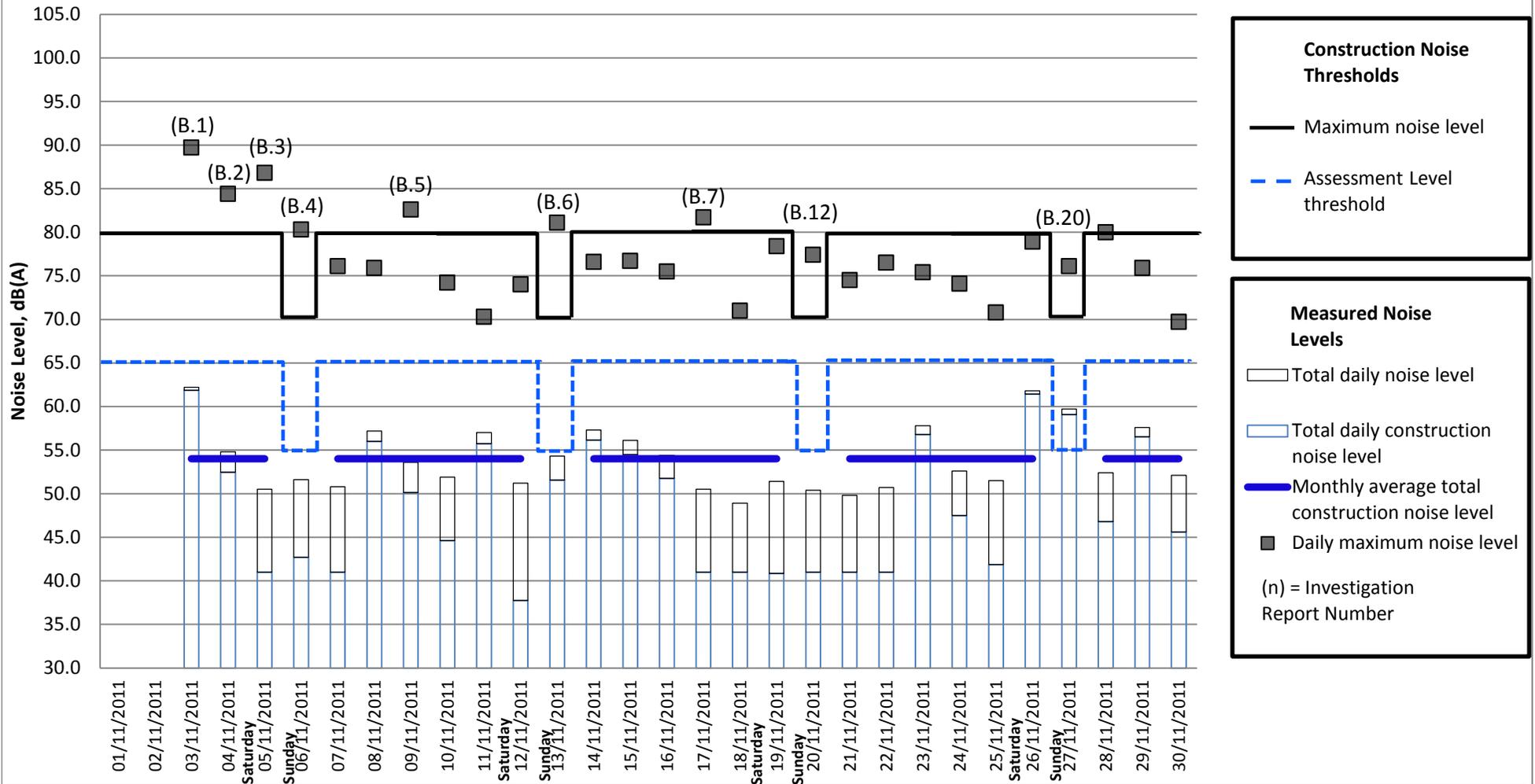
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	13-30	December 2011	During December the maximum noise threshold was exceeded on 18 occasions (daytime, 7; night time 11). As with November, audio recordings and weather data were lost as a result of water damage to the monitoring device. However, construction works were not believed to have resulted in the exceedances occurring during this period. It is likely that the exceedances occurred as a result of adverse weather conditions during this period, as were experienced at other locations and other existing noise sources.
Dundas Home Farm	1-6	December 2011 (daytime only)	During December the maximum noise threshold was exceeded on 6 occasions. No exceedances were due to construction related activities. Exceedances were caused as a result of adverse weather conditions during December and the call of a bird.
Echline Field	1-10	December 2011 (daytime only)	During January the maximum noise threshold was exceeded on 11 occasions. Exceedances have not been attributed to construction as investigations demonstrate that exceedances occurred as a result of existing traffic noise on the adjacent road and adverse weather conditions.

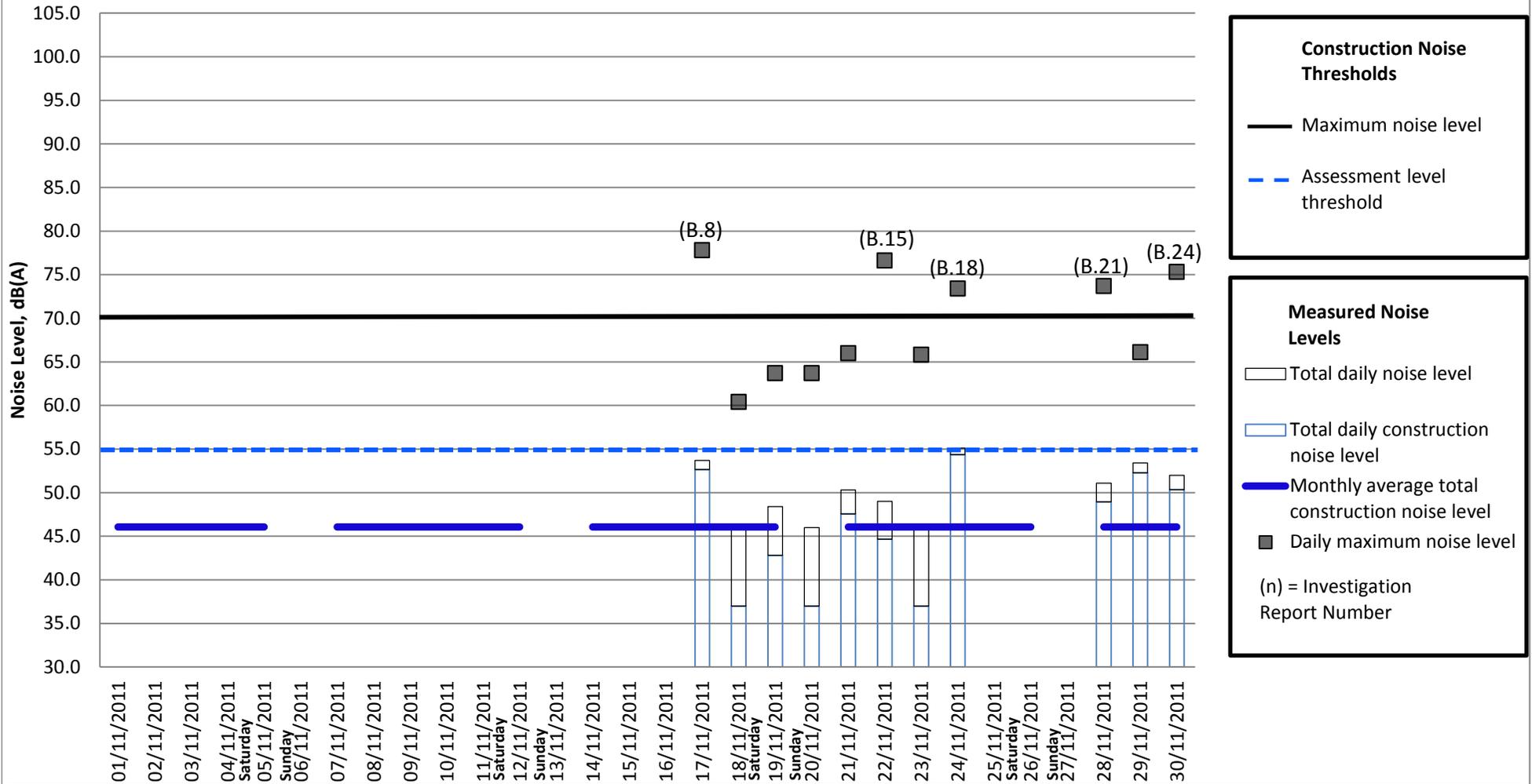
Measured Daytime Noise Levels at Butlaw Fisheries

Measurement period: November 2011



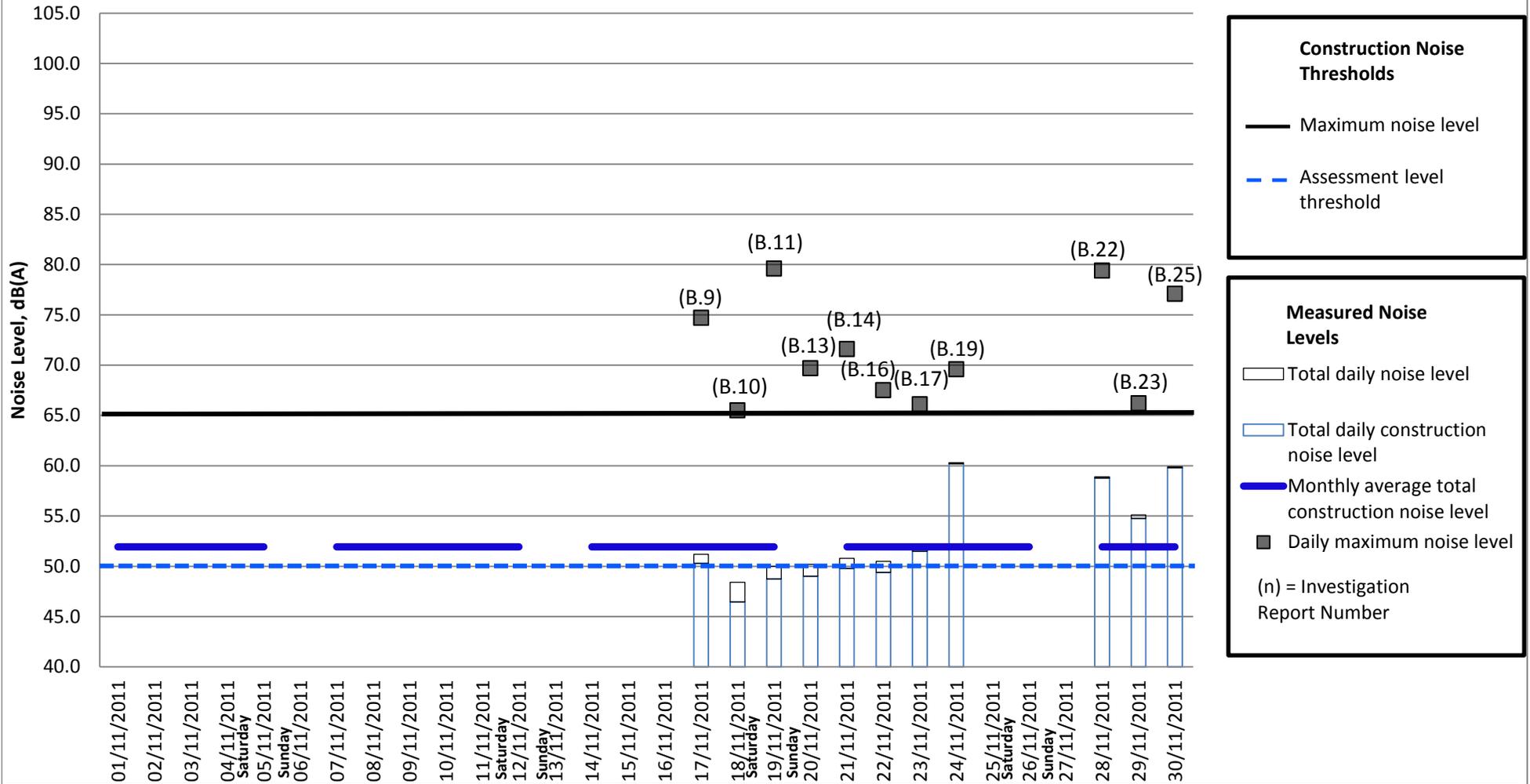
Note: Daytime noise data missing for 01/11/11 and 02/11/11 due to device error.

Measured Evening Noise Levels at Butlaw Fisheries Measurement period: November 2011



Note: Evening construction works began on 17/11/11. No evening construction works were conducted during the period 25/11/11 to 27/11/11.

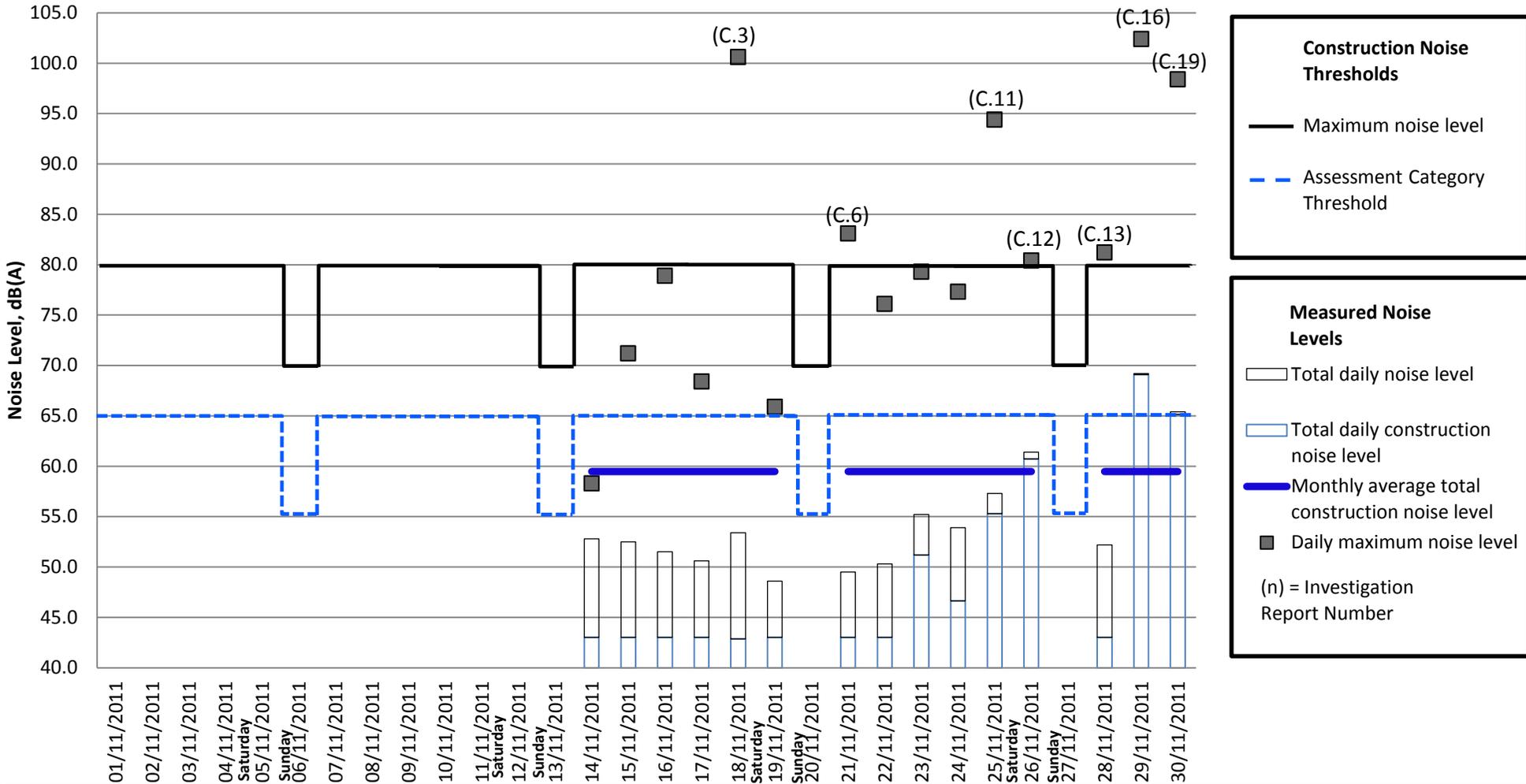
Measured Night-time Noise Levels at Butlaw Fisheries Measurement period: November 2011



Note: Night time construction works began on 17/11/11. No night time construction works were conducted during the period 25/11/11 to 27/11/11.

Measured Daytime Noise Levels at Clufflat Brae

Measurement Period: November 2011



Construction Noise Thresholds

- Maximum noise level
- - - Assessment Category Threshold

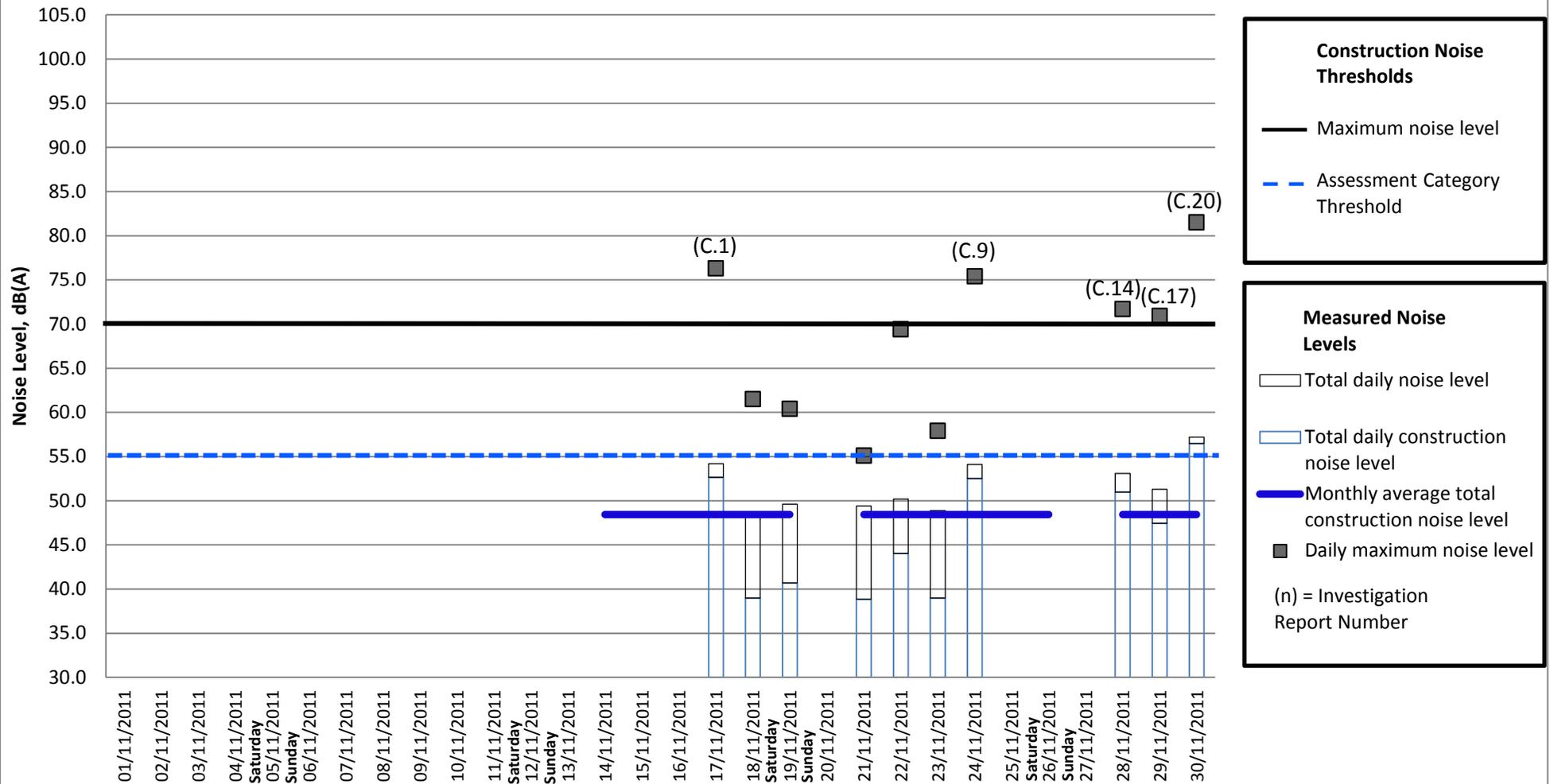
Measured Noise Levels

- Total daily noise level
- Total daily construction noise level
- Monthly average total construction noise level
- Daily maximum noise level

(n) = Investigation Report Number

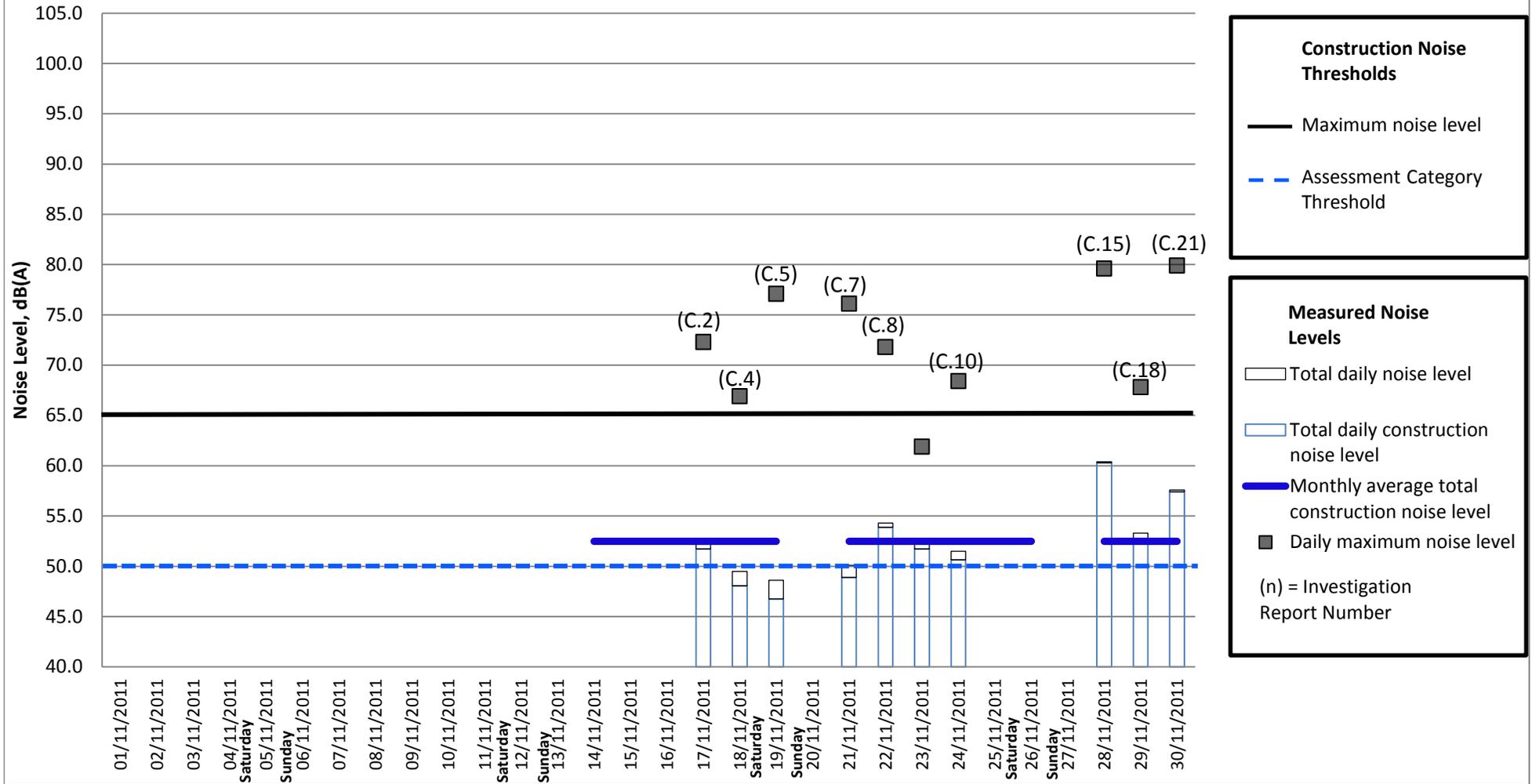
Note: Monitoring began at this location on 14/11/11. Sunday noise data has not been included as no construction works have been conducted during these hours.

Measured Evening Noise Levels at Clufflat Brae Measurement period: November 2011



Note: Monitoring began at this location on 14/11/11. Evening construction works began on 17/11/11. No evening construction works were conducted during the period 25/11/11 to 27/11/11. Sunday noise data has not been included as no construction works have been conducted during these hours.

Measured Night-time Noise Levels at Clufflat Brae Measurement period: November 2011



Construction Noise Thresholds

- Maximum noise level
- - - Assessment Category Threshold

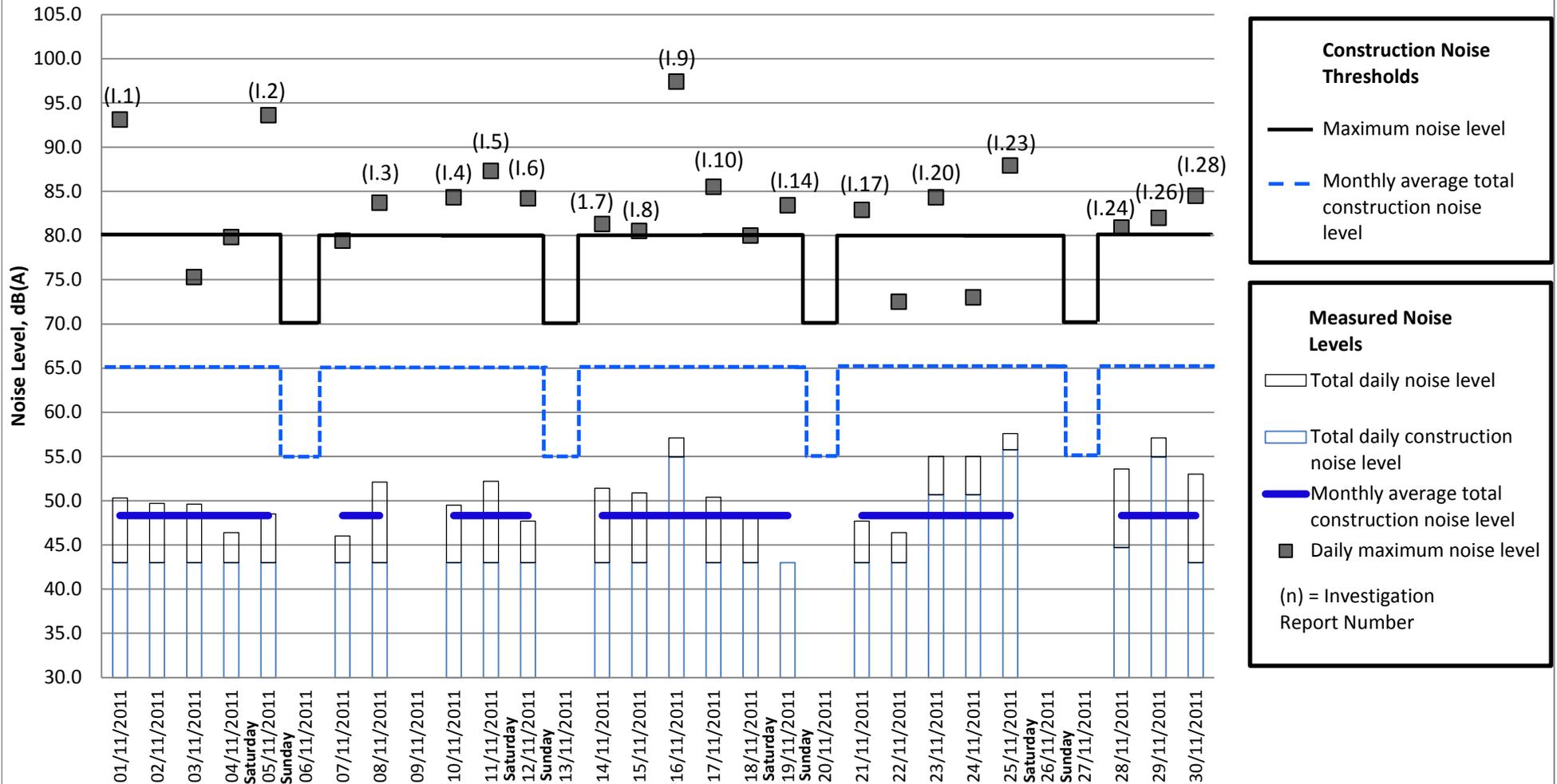
Measured Noise Levels

- Total daily noise level
- Total daily construction noise level
- Monthly average total construction noise level
- Daily maximum noise level

(n) = Investigation Report Number

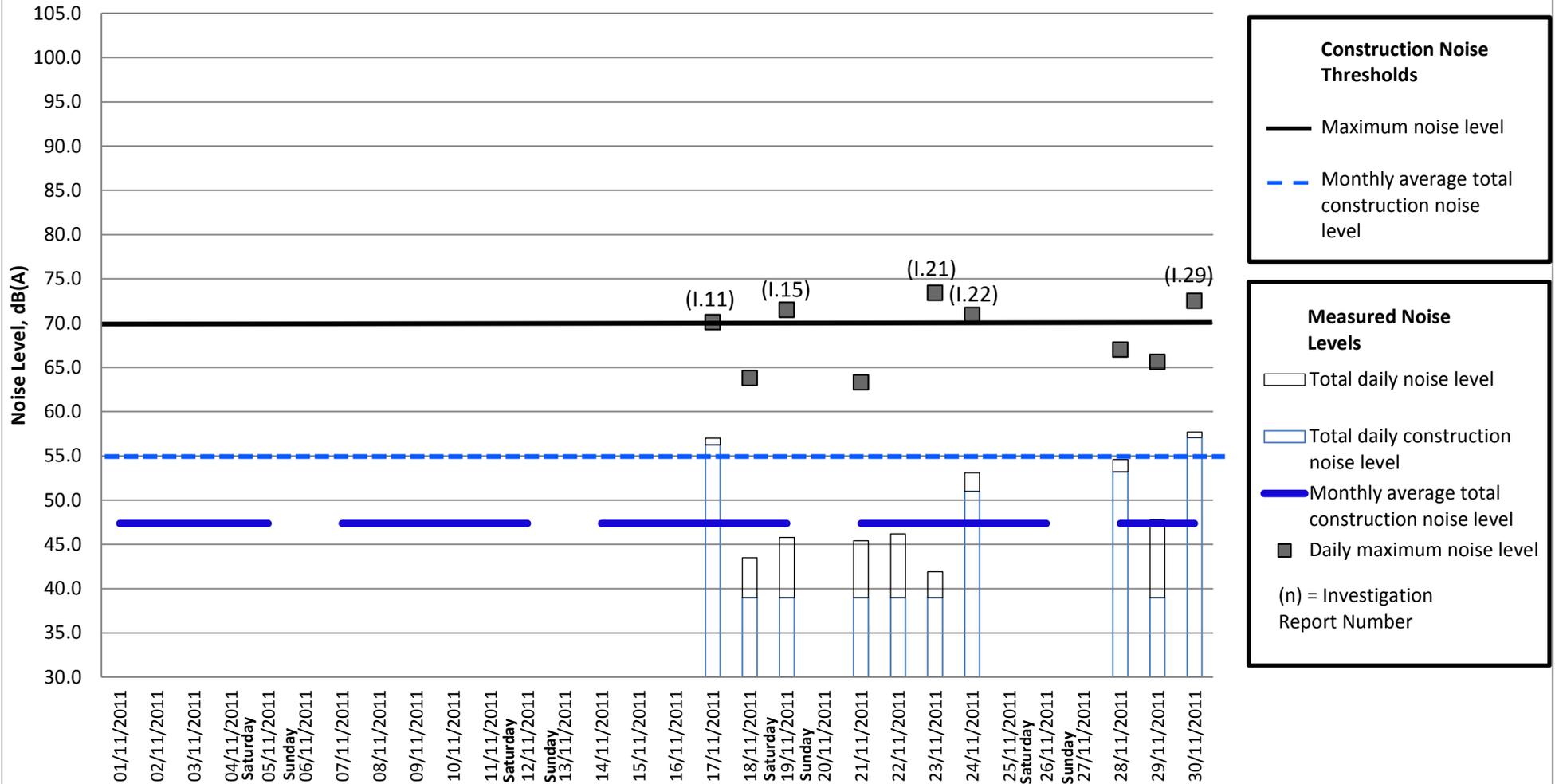
Note: Monitoring began at this location on 14/11/11. Night time construction works began on 17/11/11. No night time construction works were conducted during the period 25/11/11 to 27/11/11. Sunday noise data has not been included as no construction works have been conducted during these hours.

Measured Daytime Noise Levels at Inchgarvie Measurement period: November 2011



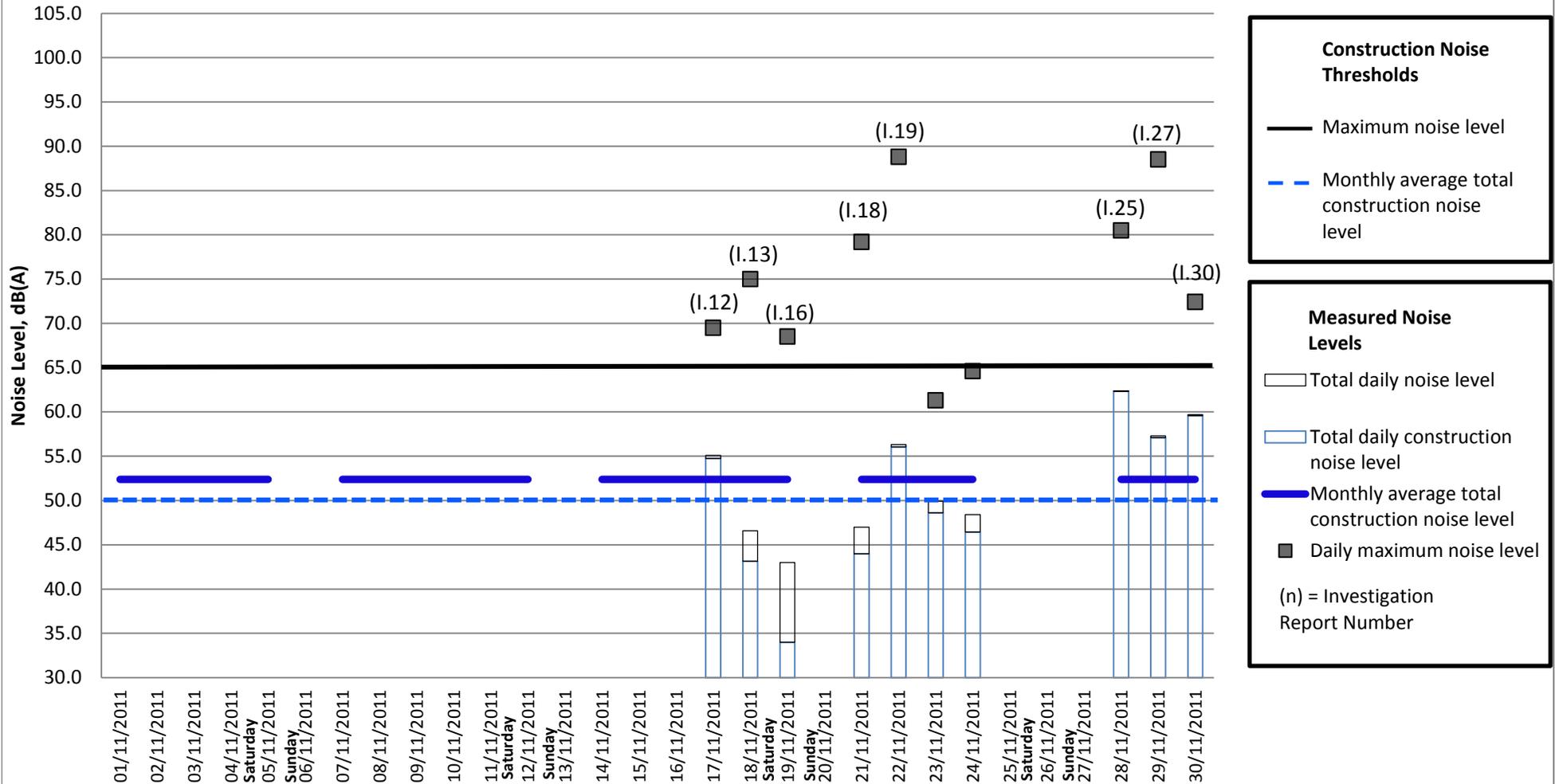
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Daytime noise data is missing for 09/11/11 and 26/11/11 due to device error. Daily maximum noise level is missing for 02/11/11 due to device error.

Measured Evening Noise Levels at Inchgarvie Measurement period: November 2011



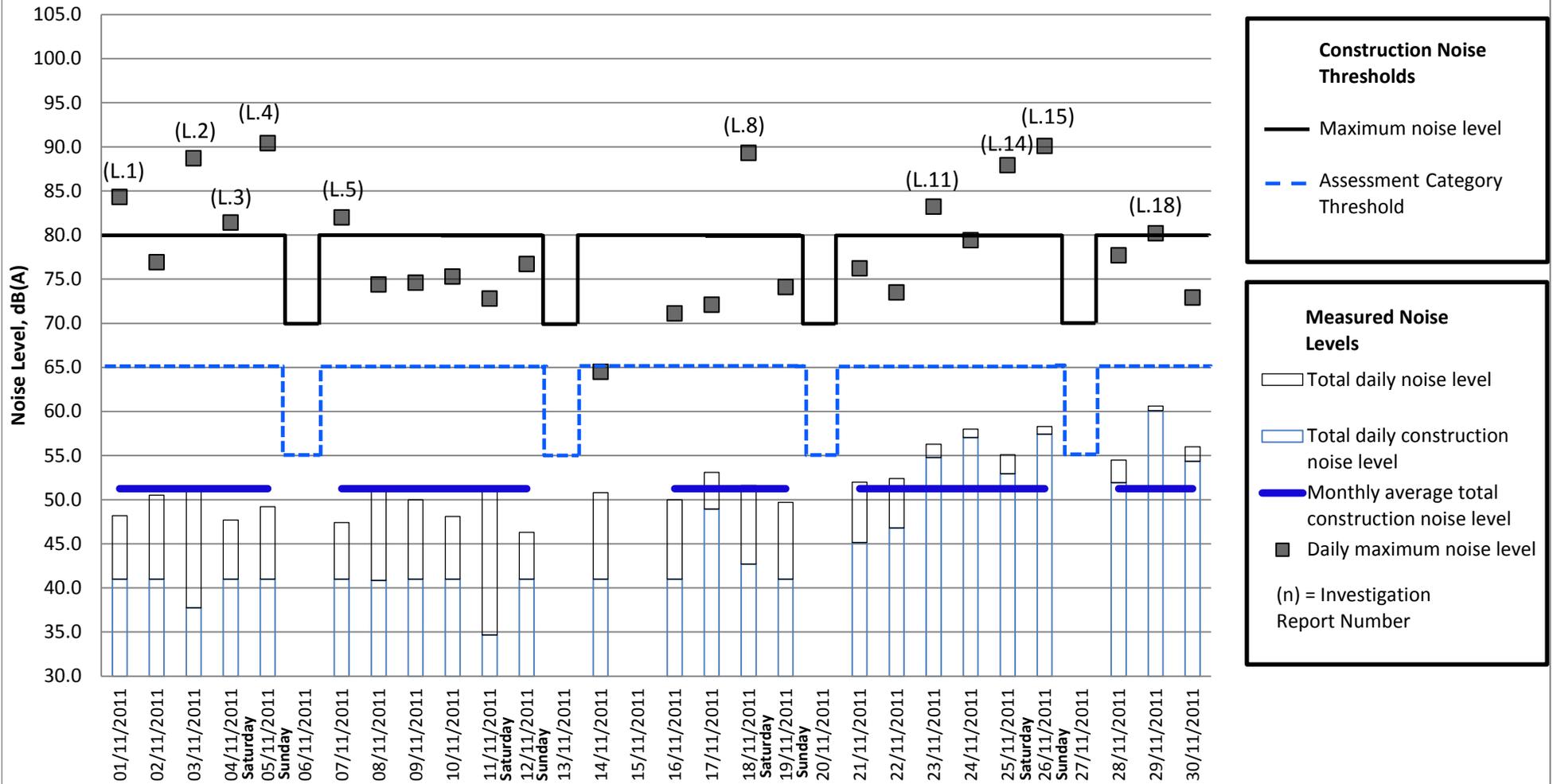
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Evening construction began on 17/11/11. No evening construction works were conducted during the period 25/11/11 to 17/11/11. Evening maximum noise level data is missing for 22/11/11 due to device error.

Measured Night-time Noise Levels at Inchgarvie Measurement period: November 2011



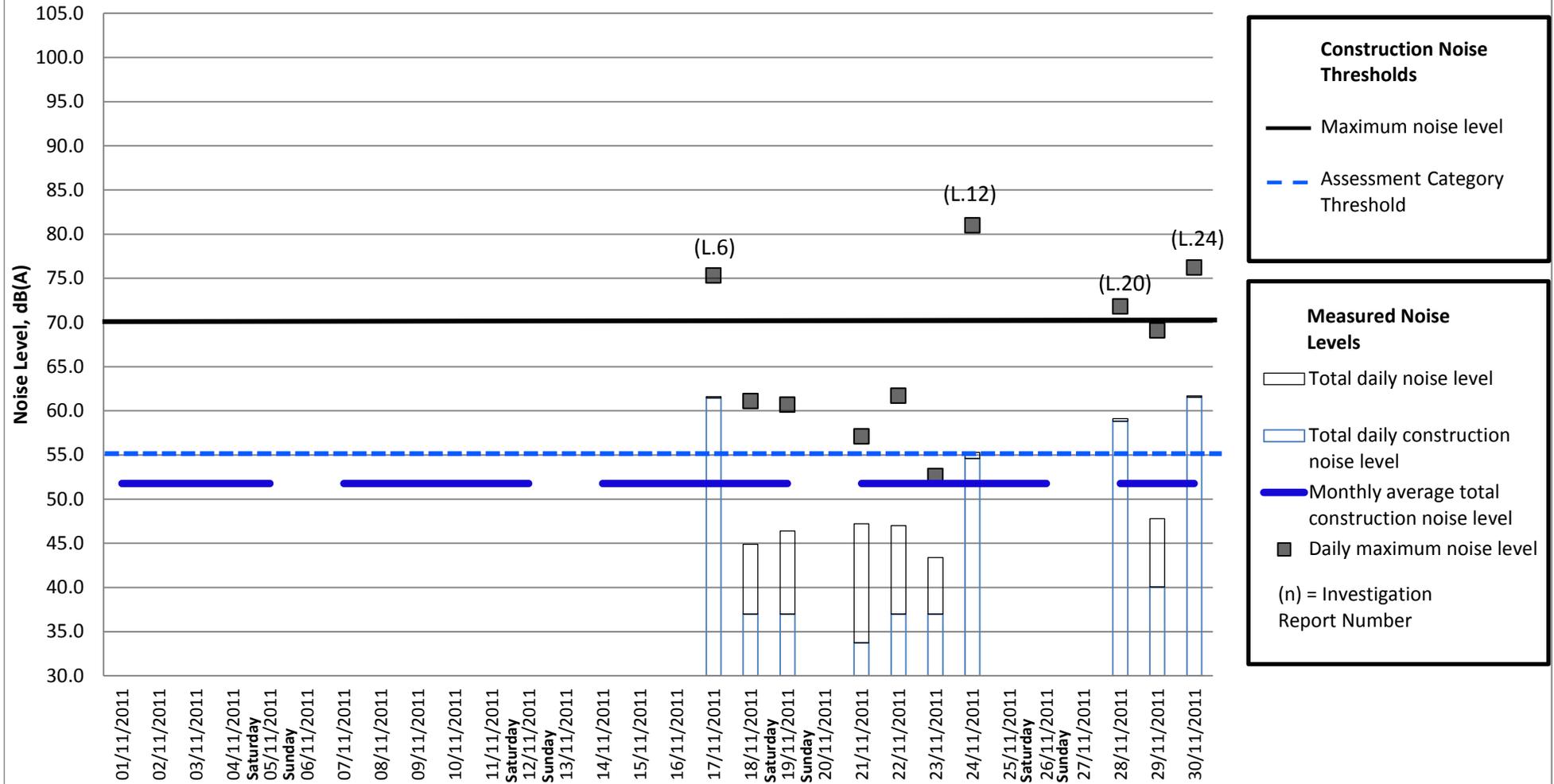
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Night time construction works began on 17/11/11. No night time construction works were conducted during the period 25/11/11 to 27/11/11.

Measured Daytime Noise Levels at Linn Mill Measurement period: November 2011



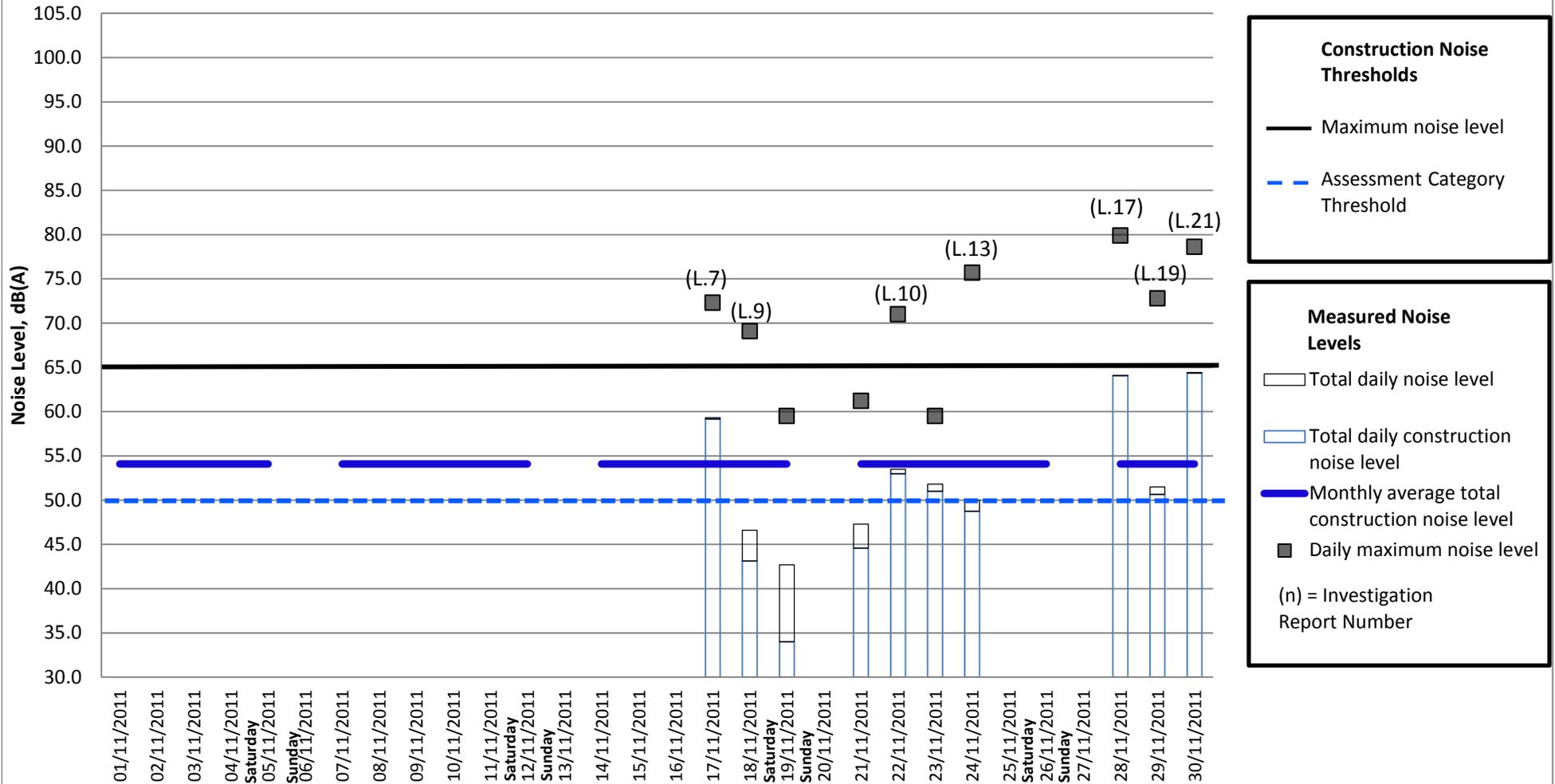
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Daytime noise data is missing for the 15/11/11 due to device error.

Measured Evening Noise Levels at Linn Mill Measurement period: November 2011



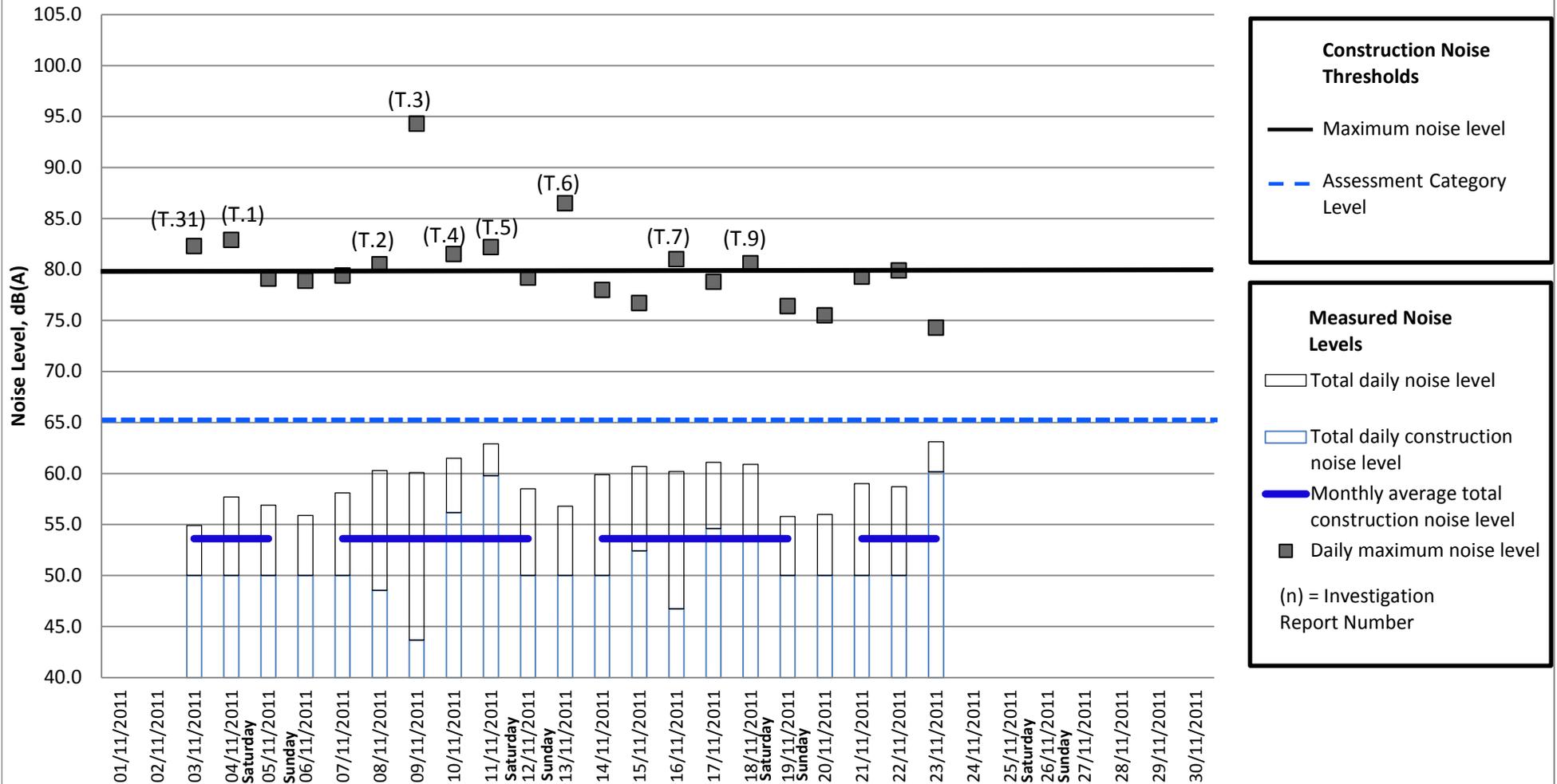
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Evening construction works began on 17/11/11. No evening construction works were conducted during the period 25/11/11 to 27/11/11.

Measured Night-time Noise Levels at Linn Mill Measurement period: November 2011



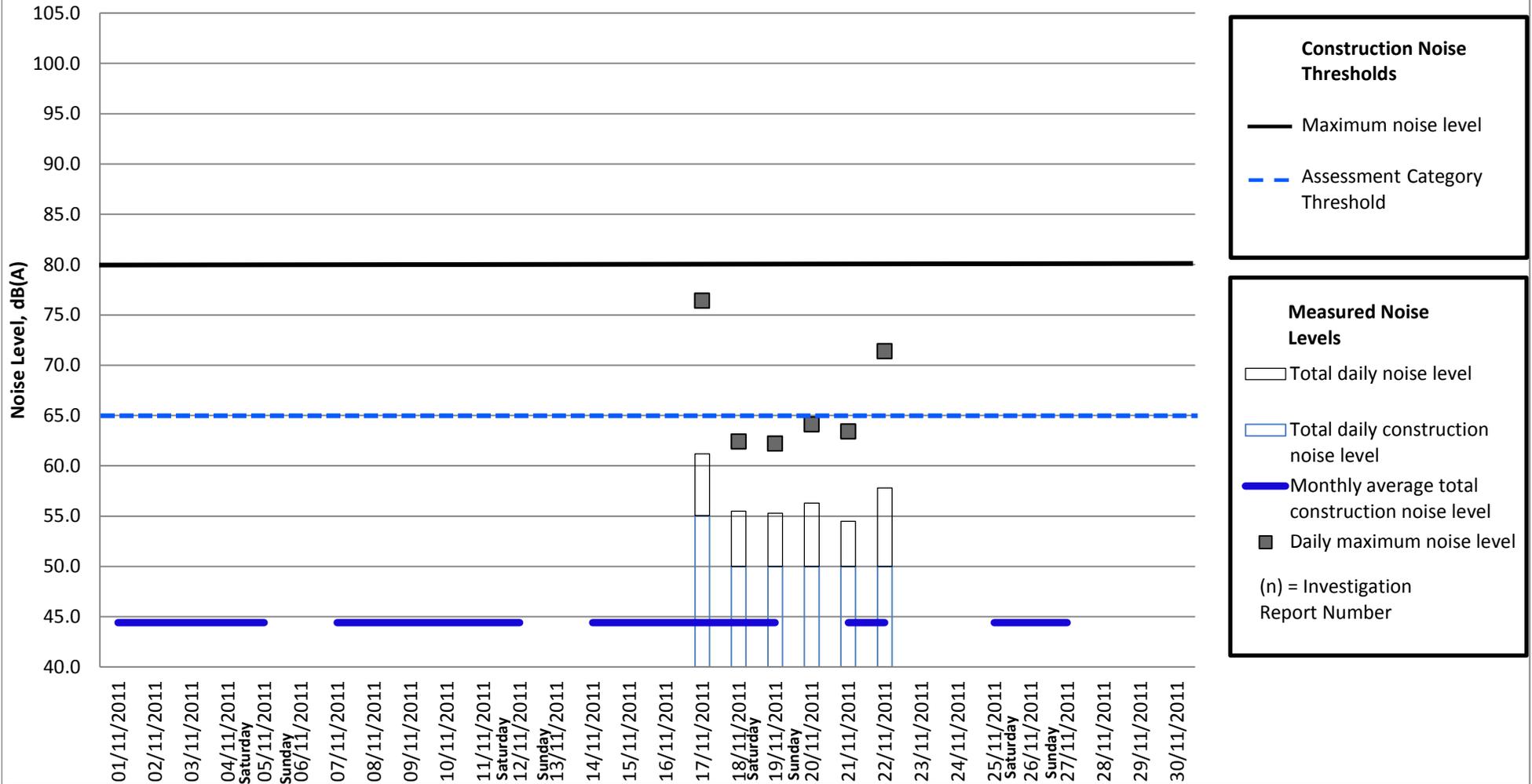
Note: Sunday noise data has not been included as no construction works have been conducted during this period. Night time construction works began on 17/11/11. No night time construction works were conducted during the periodn 25/11/11 to 27/11/11.

Measured Daytime Noise Levels at Tigh-Na-Grian Measurement period: November 2011



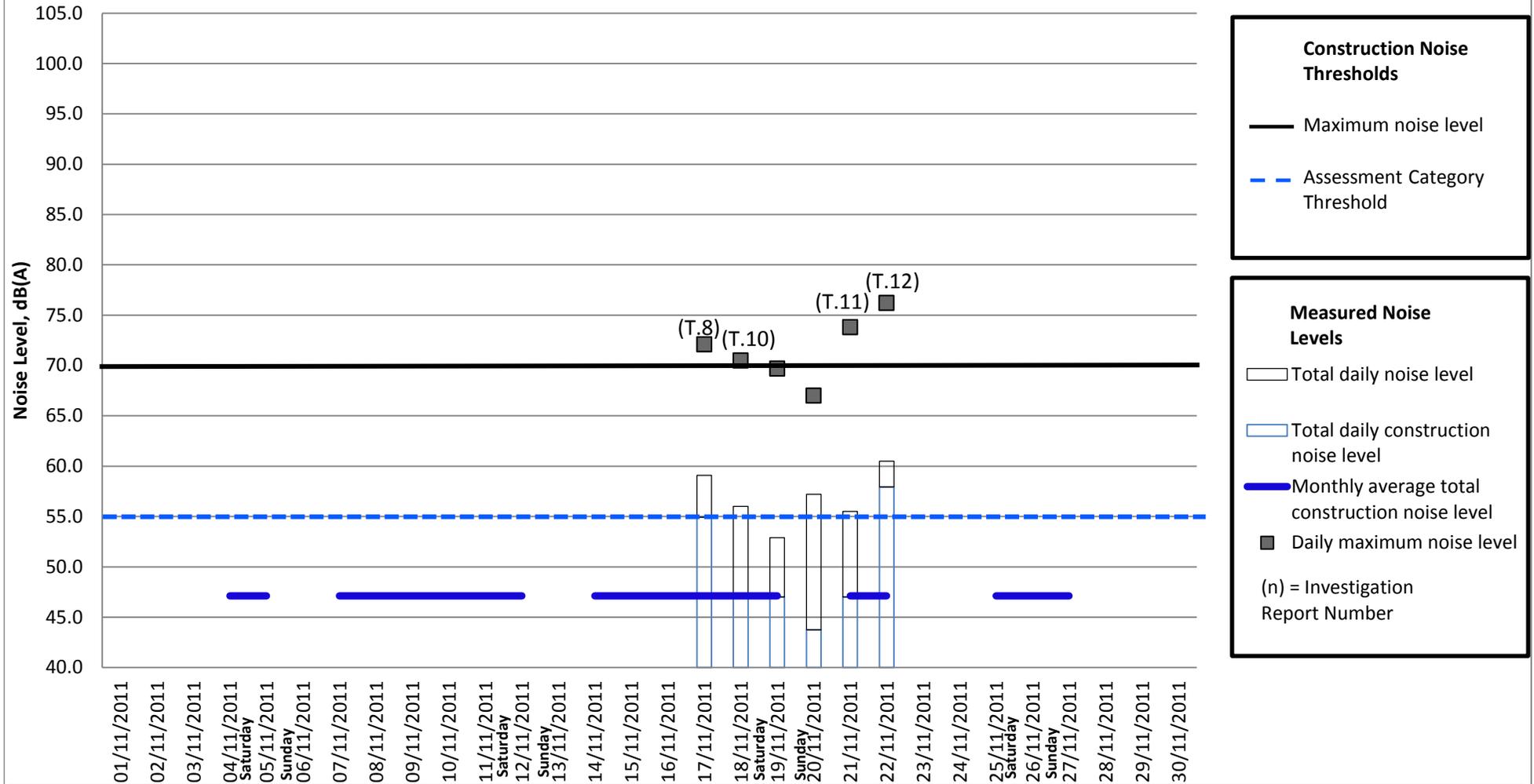
Note: Daytime noise data is missing for 01/11/11, 02/11/11 and the period 24/11/11 to 30/11/11 due to device error.

Measured Evening Noise Levels at Tigh-Na-Grian Measurement period: November 2011



Note: Evening construction began on 17/11/11. No evening construction works were conducted during the period 25/11/11 to 27/11/11. Evening noise data is missing for the periods 23/11/11 to 24/11/11 and 28/11/11 to 30/11/11 due to device error.

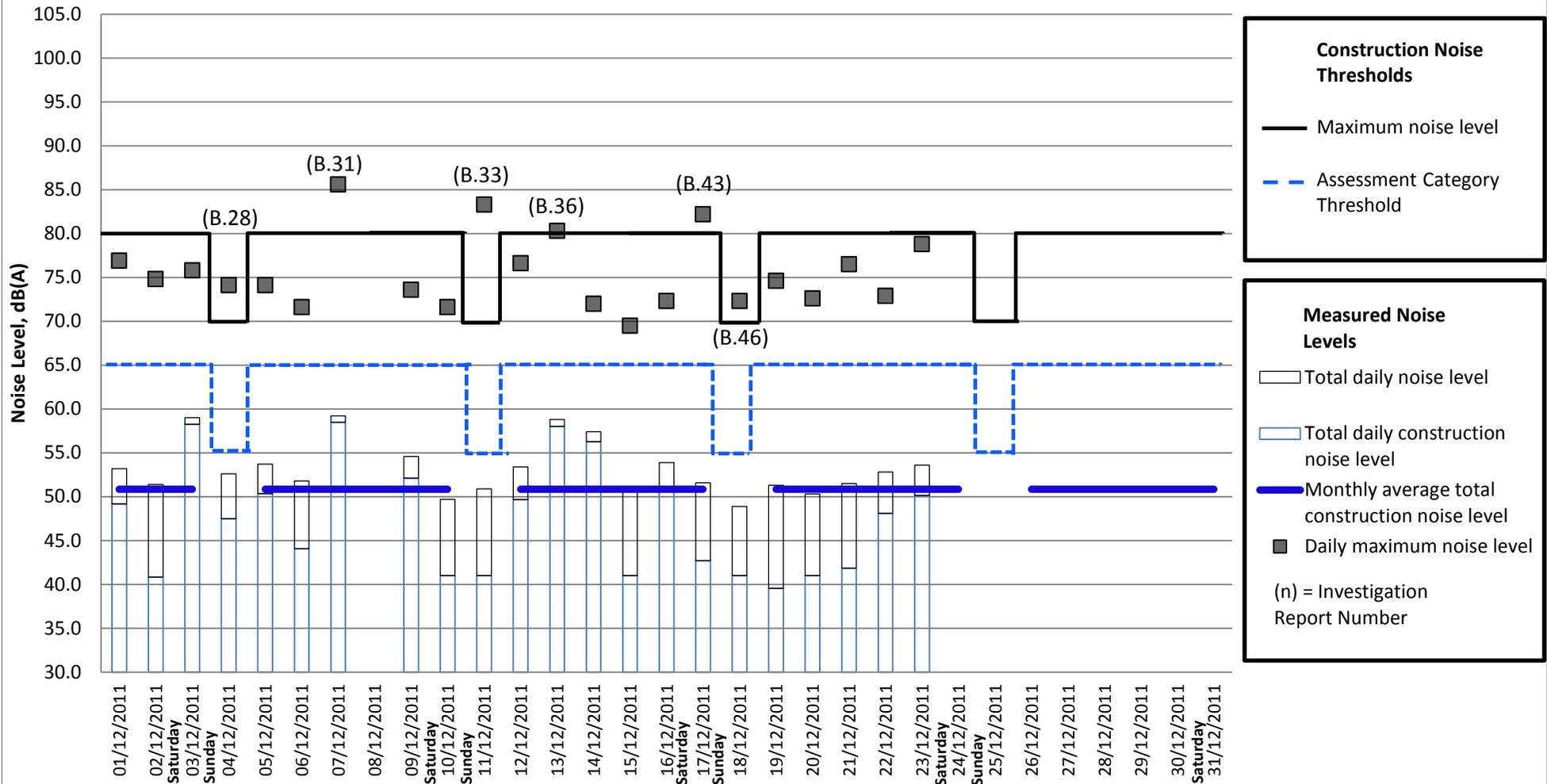
Measured Night-time Noise Levels at Tigh-Na-Grian Measurement period: November 2011



Note: Night time construction works began on 17/11/11. No night time construction works were conducted during the period 25/11/11 to 27/11/11. Night time noise data missing for the periods 23/11/11 to 24/11/11 and 28/11/11 to 30/11/11 due to device error.

Measured Daytime Noise Levels at Butlaw Fisheries

Measurement period: December 2011



Construction Noise Thresholds

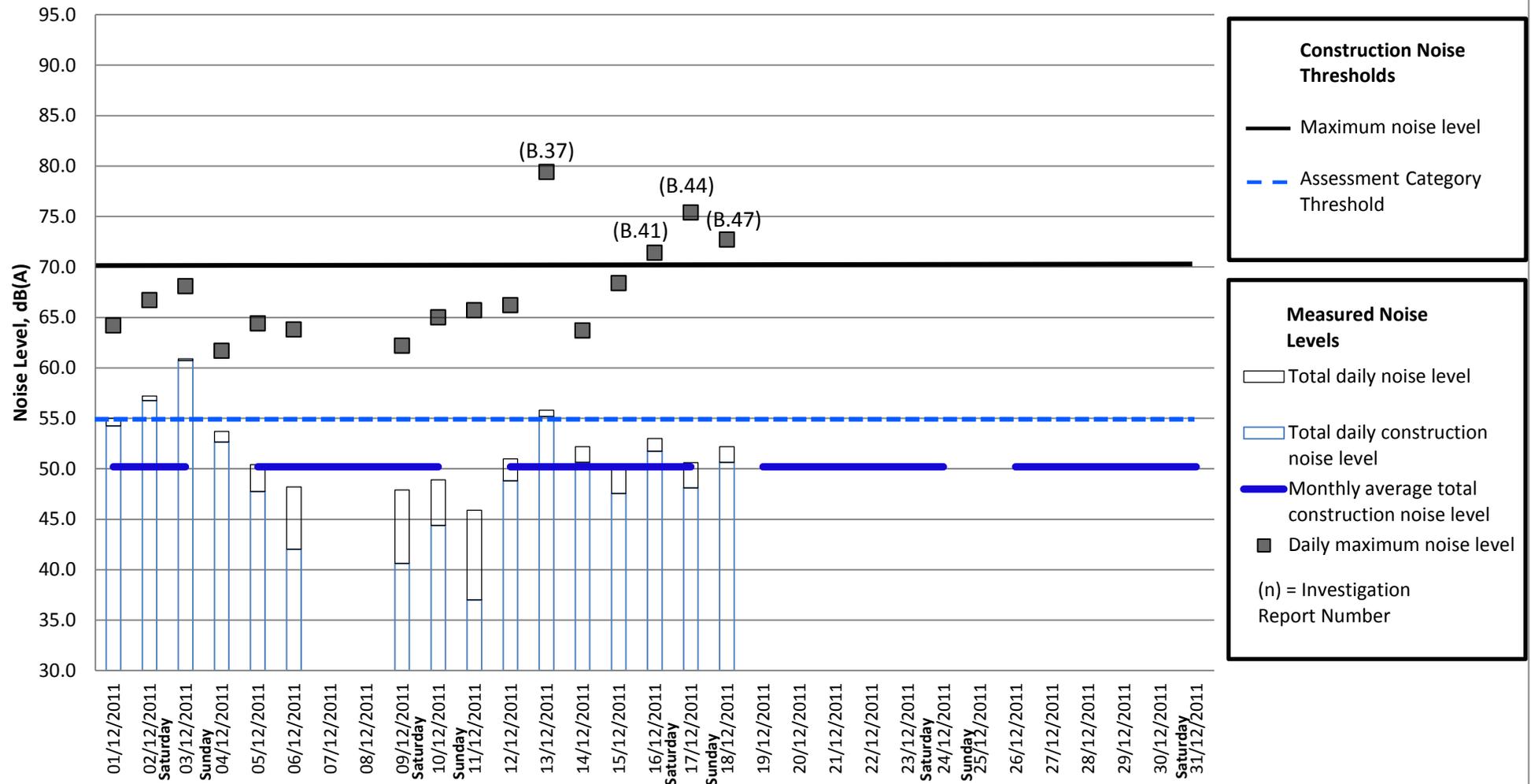
- Maximum noise level
- - - Assessment Category Threshold

Measured Noise Levels

- Total daily noise level
- Total daily construction noise level
- Monthly average total construction noise level
- Daily maximum noise level
- (n) = Investigation Report Number

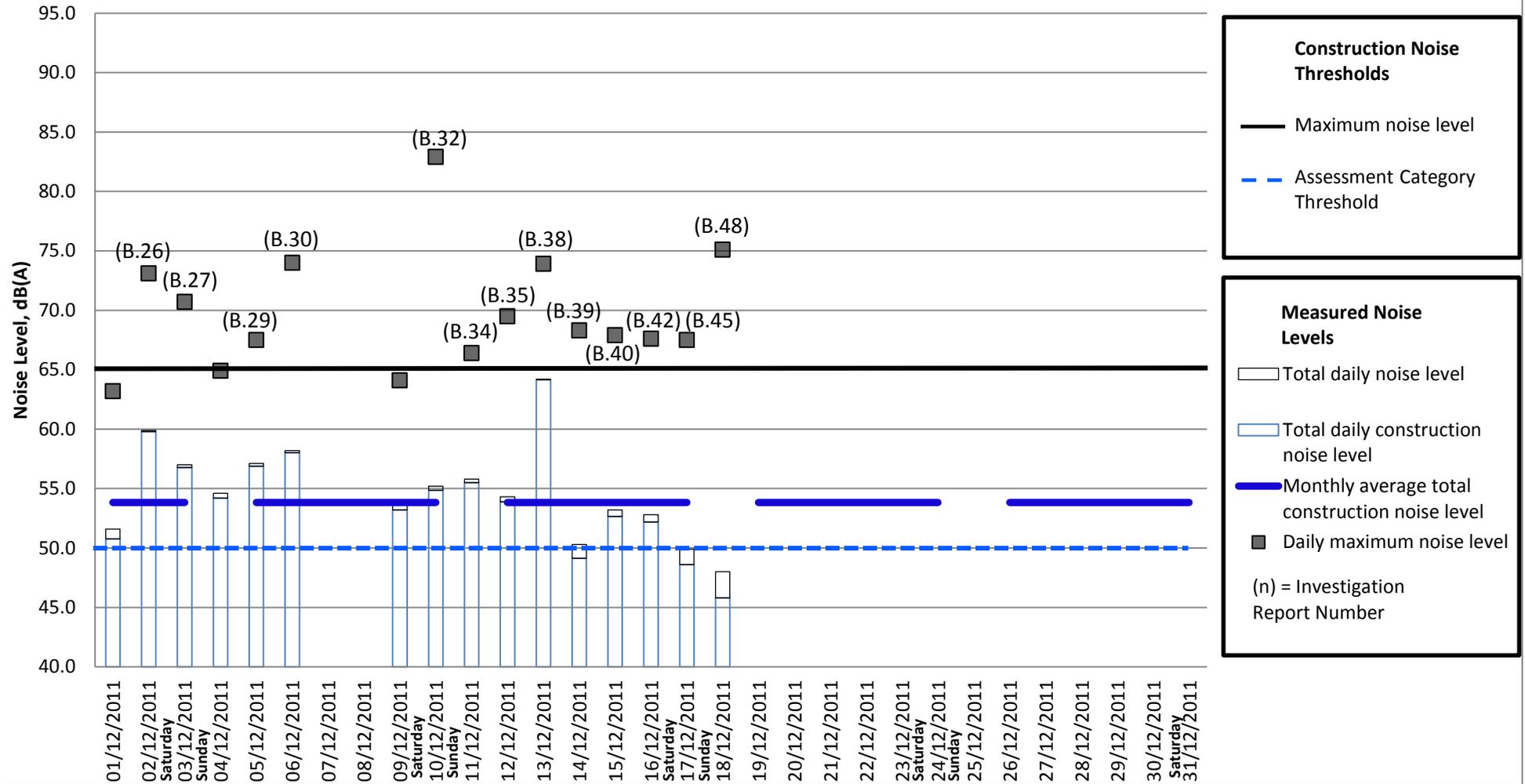
Note: No daytime construction works were conducted on 08/12/11 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

Measured Evening Noise Levels at Butlaw Fisheries Measurement period: December 2011



Note: No evening construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions . No evening construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12) .

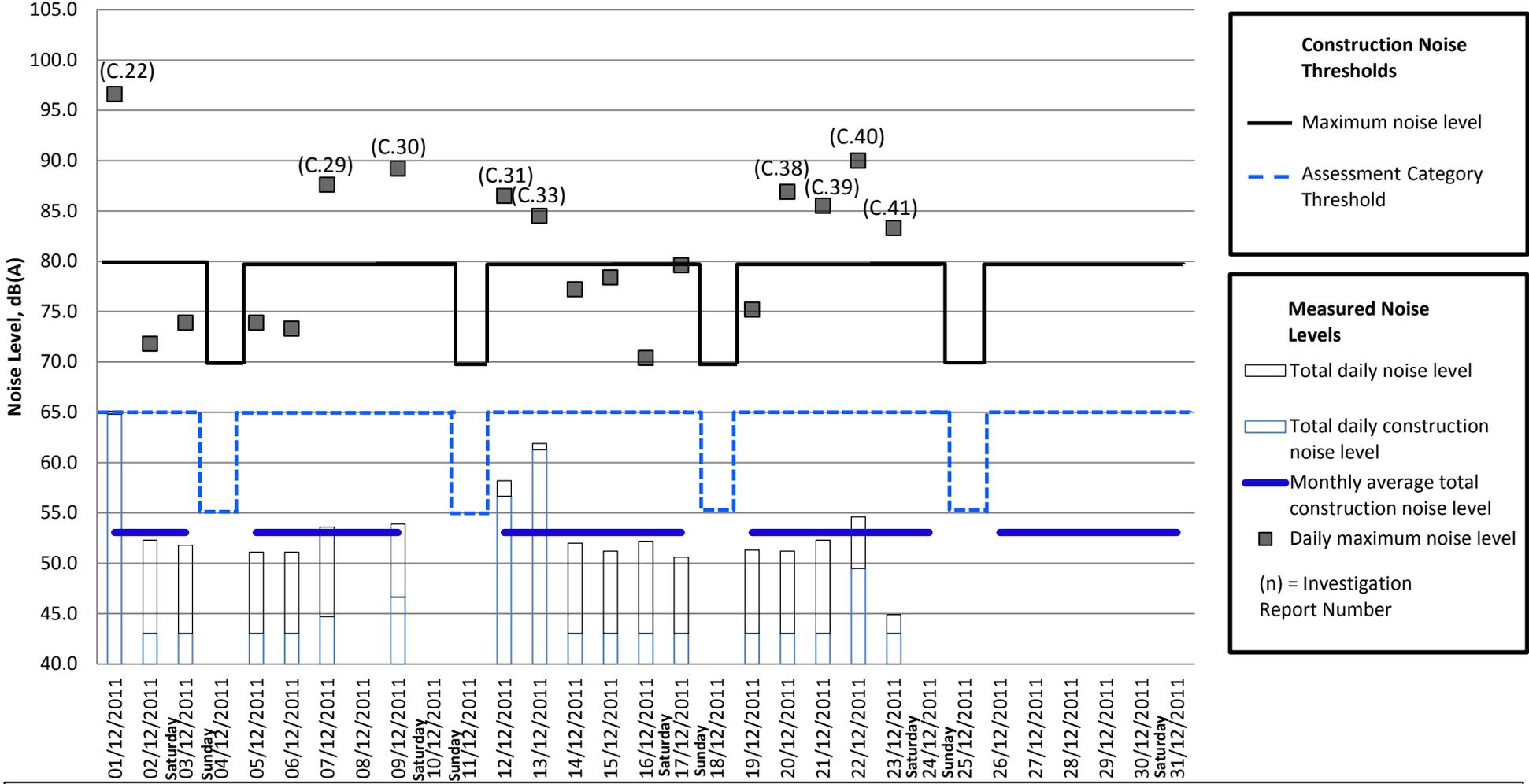
Measured Night time Noise Levels at Butlaw Fisheries Measurement period: December 2011



Note: No night time construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No night time construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Daytime Noise Levels at Clufflat Brae

Measurement period: December 2011



Construction Noise Thresholds

- Maximum noise level
- - - Assessment Category Threshold

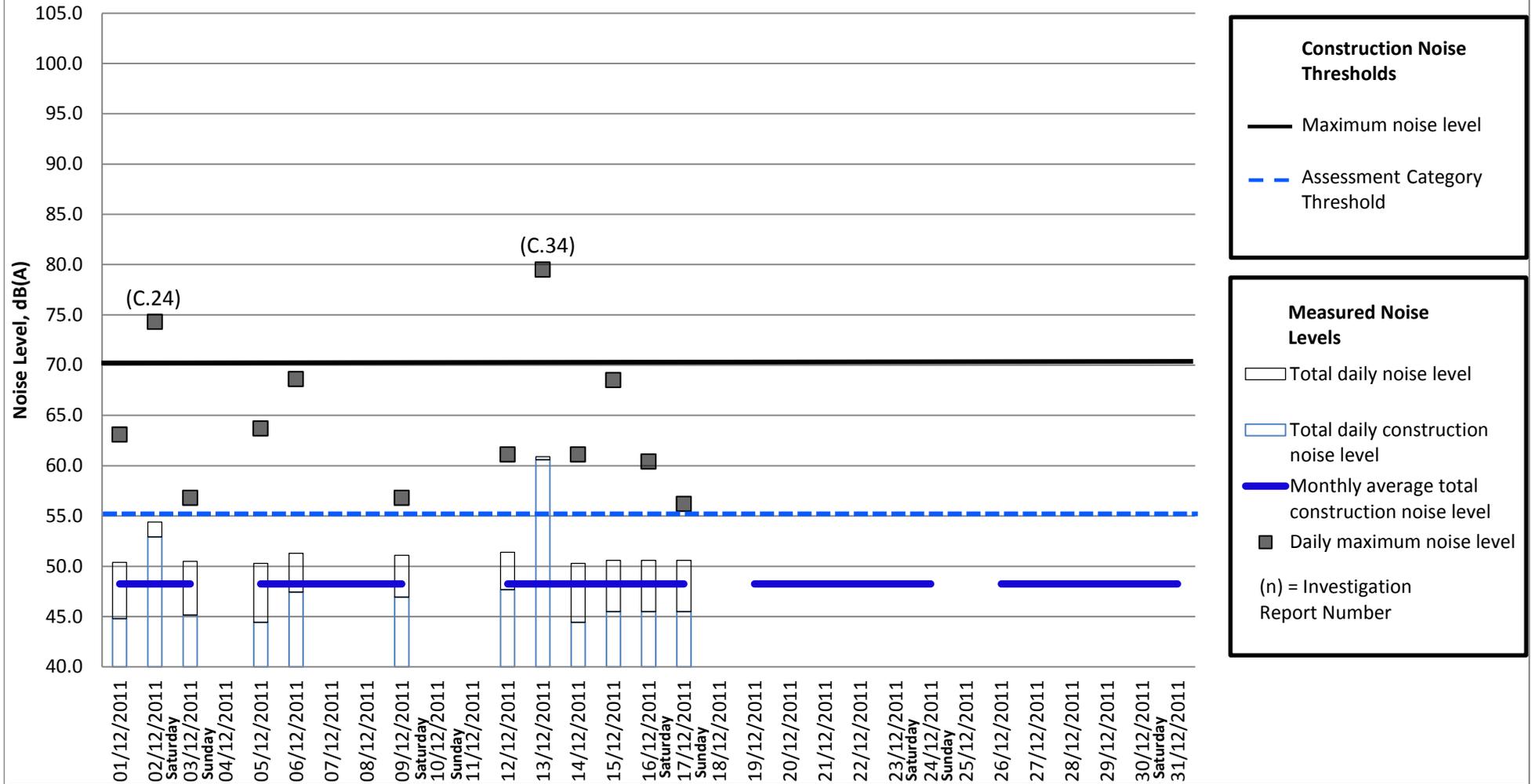
Measured Noise Levels

- Total daily noise level
- Total daily construction noise level
- Monthly average total construction noise level
- Daily maximum noise level

(n) = Investigation Report Number

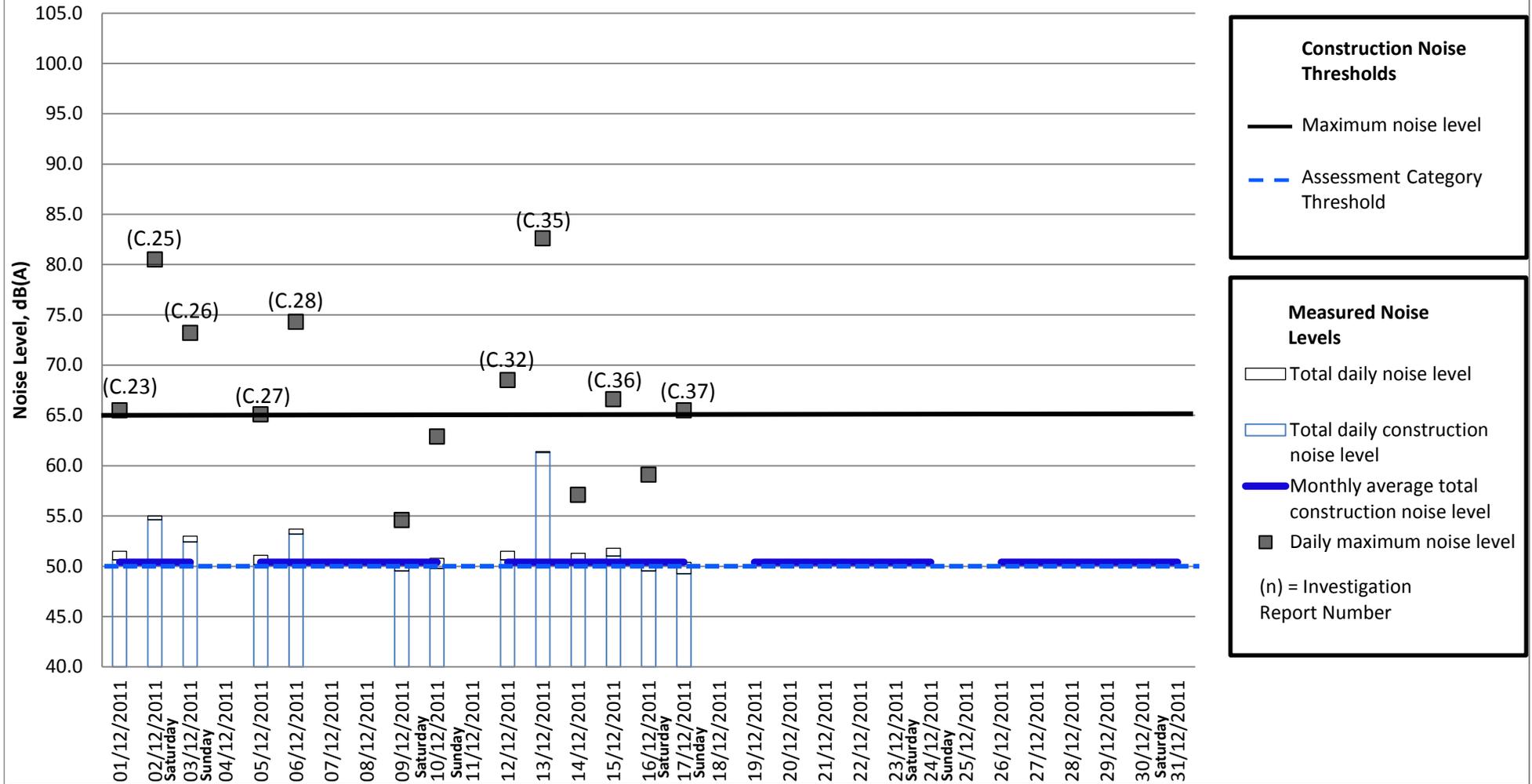
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Daytime noise data is missing for 10/11/12 due to device error. No daytime construction works were conducted on 08/12/2011 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

Measured Evening Noise Levels at Clufflat Brae Measurement period: December 2011



Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Evening noise data is missing for 10/12/11 due to device error. No evening construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No evening construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Night-time Noise Levels at Clufflat Brae Measurement period: December 2011



Construction Noise Thresholds

— Maximum noise level

- - - Assessment Category Threshold

Measured Noise Levels

□ Total daily noise level

□ Total daily construction noise level

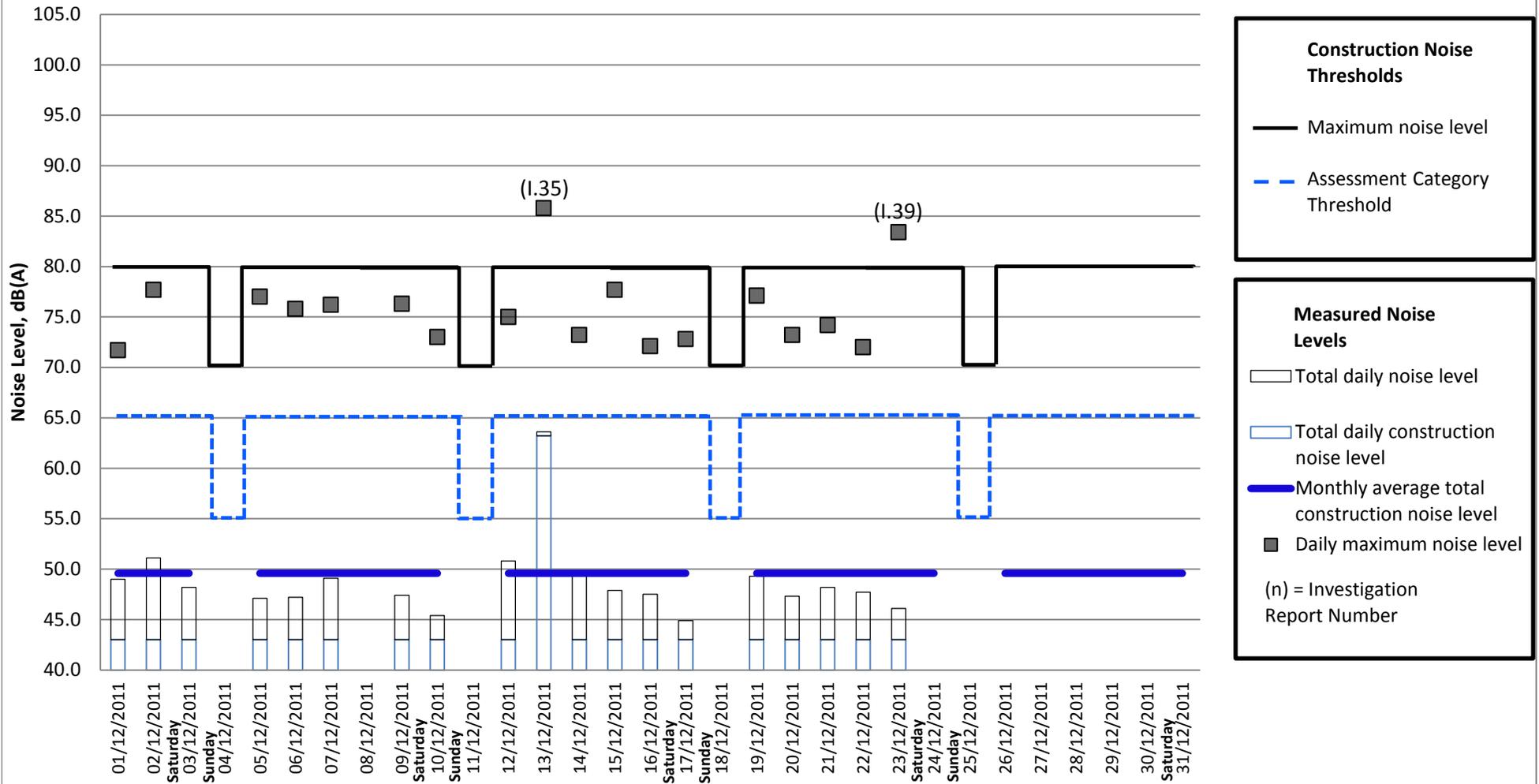
— Monthly average total construction noise level

■ Daily maximum noise level

(n) = Investigation Report Number

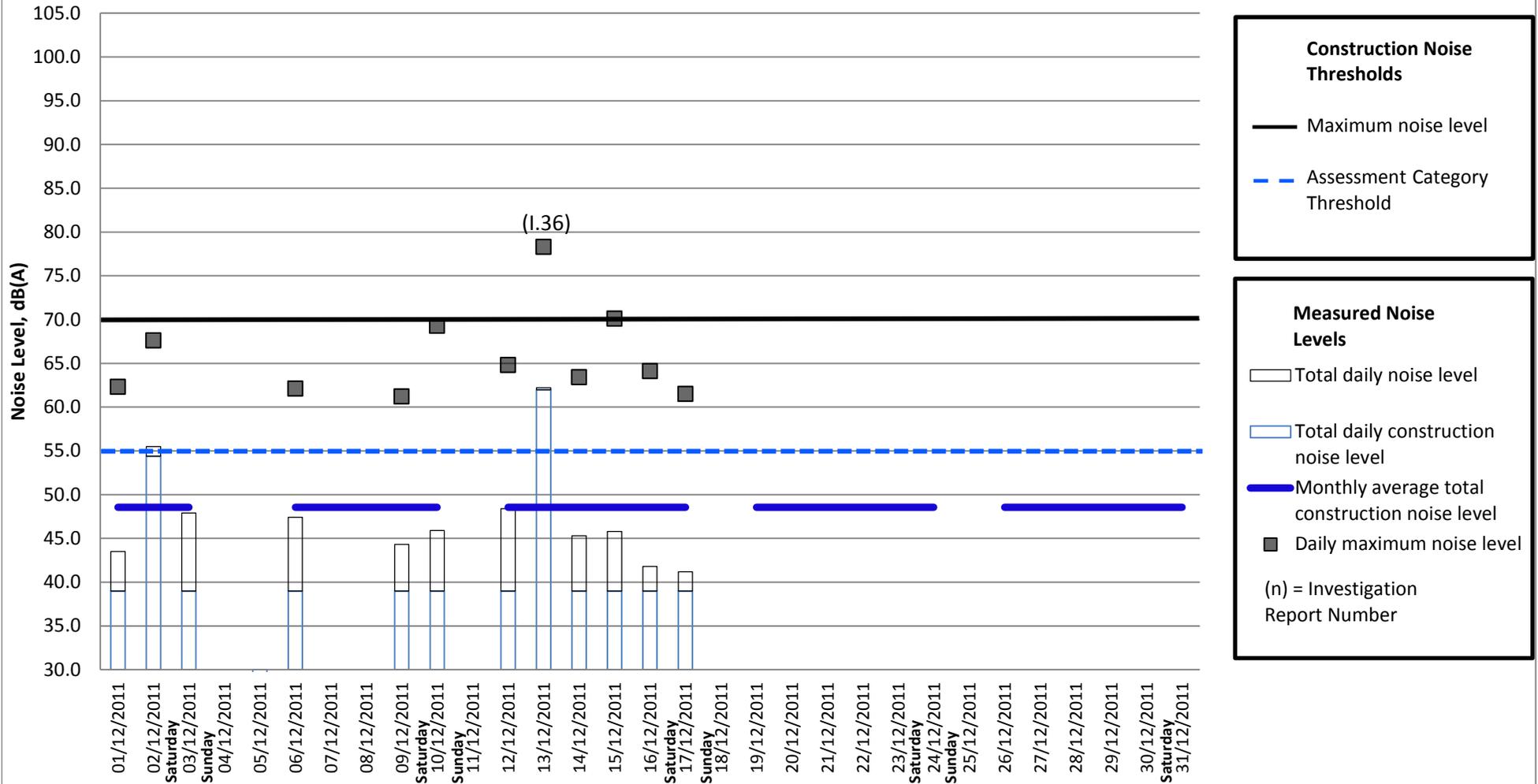
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. No night time construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No night time construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Daytime Noise Levels at Inchgarvie Measurement period: December 2011



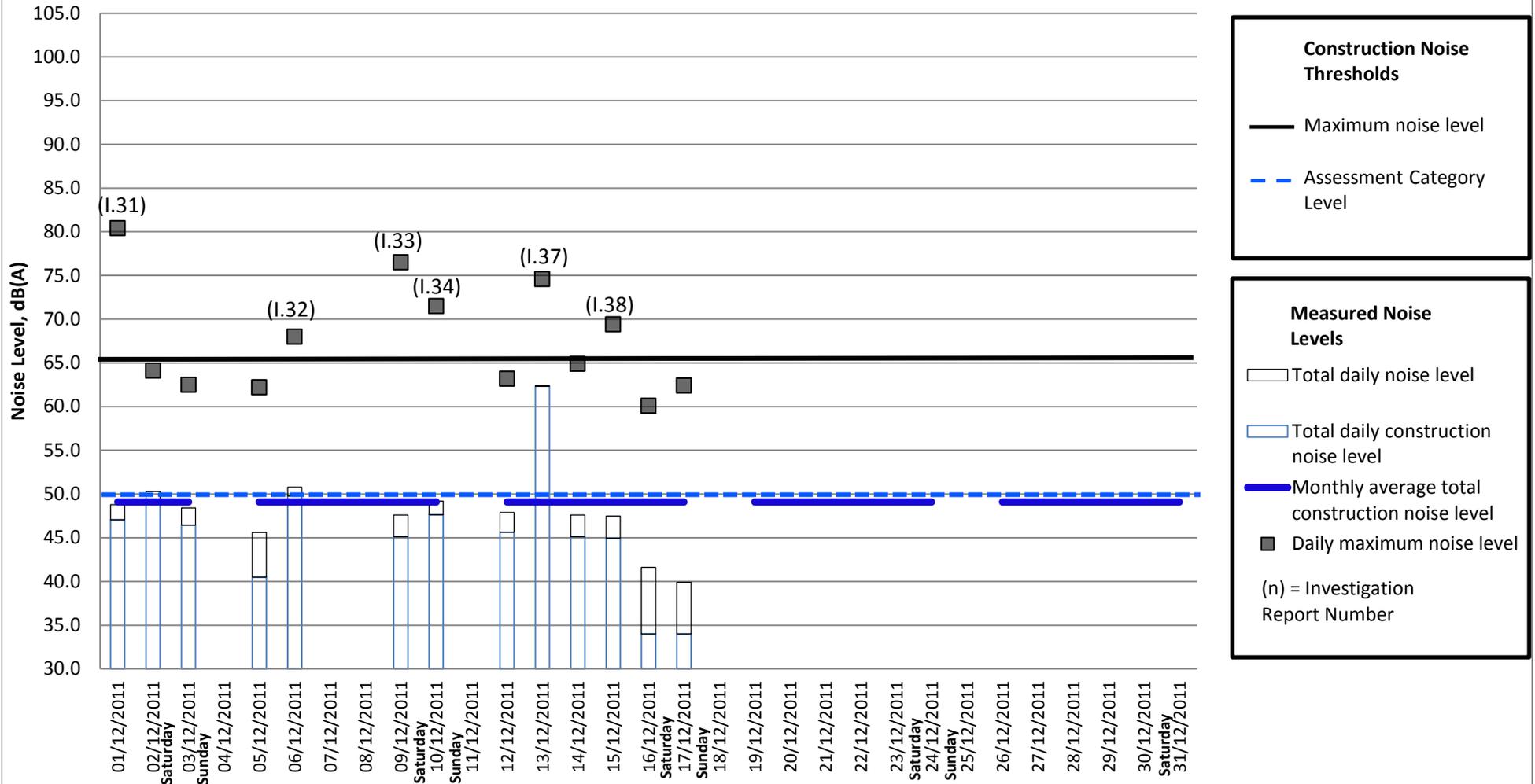
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Daytime maximum noise level data missing for 03/12/11 due to device error. No daytime construction works were conducted on 08/12/11 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

Measured Evening Noise Levels at Inchgarvie Measurement period: December 2011



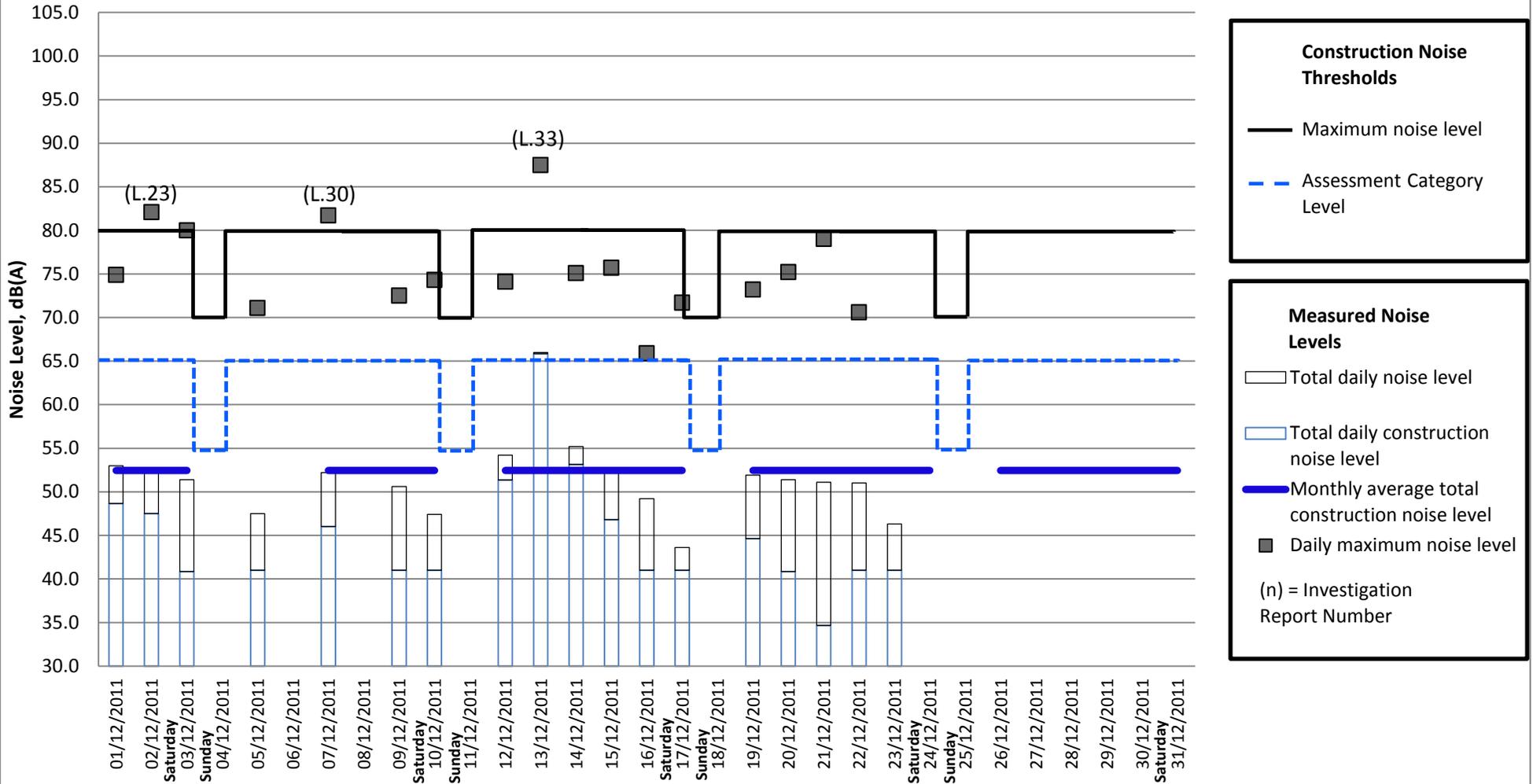
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Evening noise data is missing for 05/12/11 due to device error. Evening maximum noise data is missing for 03/12/11 due to device error. No evening construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No evening construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Night-time Noise Levels at Inchgarvie Measurement period: December 2011



Note: Sunday noise data has not been included as no construction works have been conducted during these hours. No night time construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No night time construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Daytime Noise levels at Linn Mill Measurement period: December 2011



Construction Noise Thresholds

- Maximum noise level
- - - Assessment Category Level

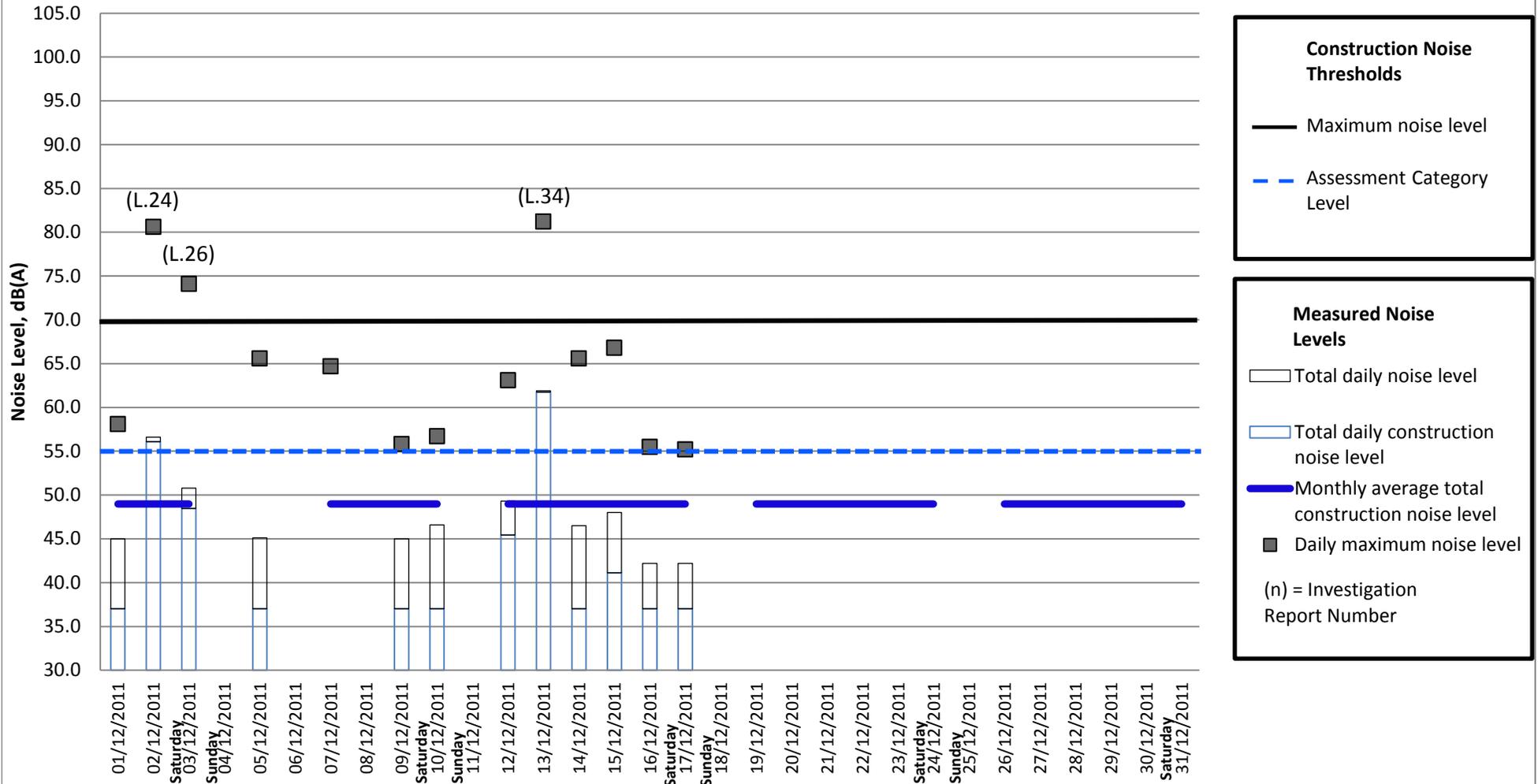
Measured Noise Levels

- Total daily noise level
- Total daily construction noise level
- Monthly average total construction noise level
- Daily maximum noise level

(n) = Investigation Report Number

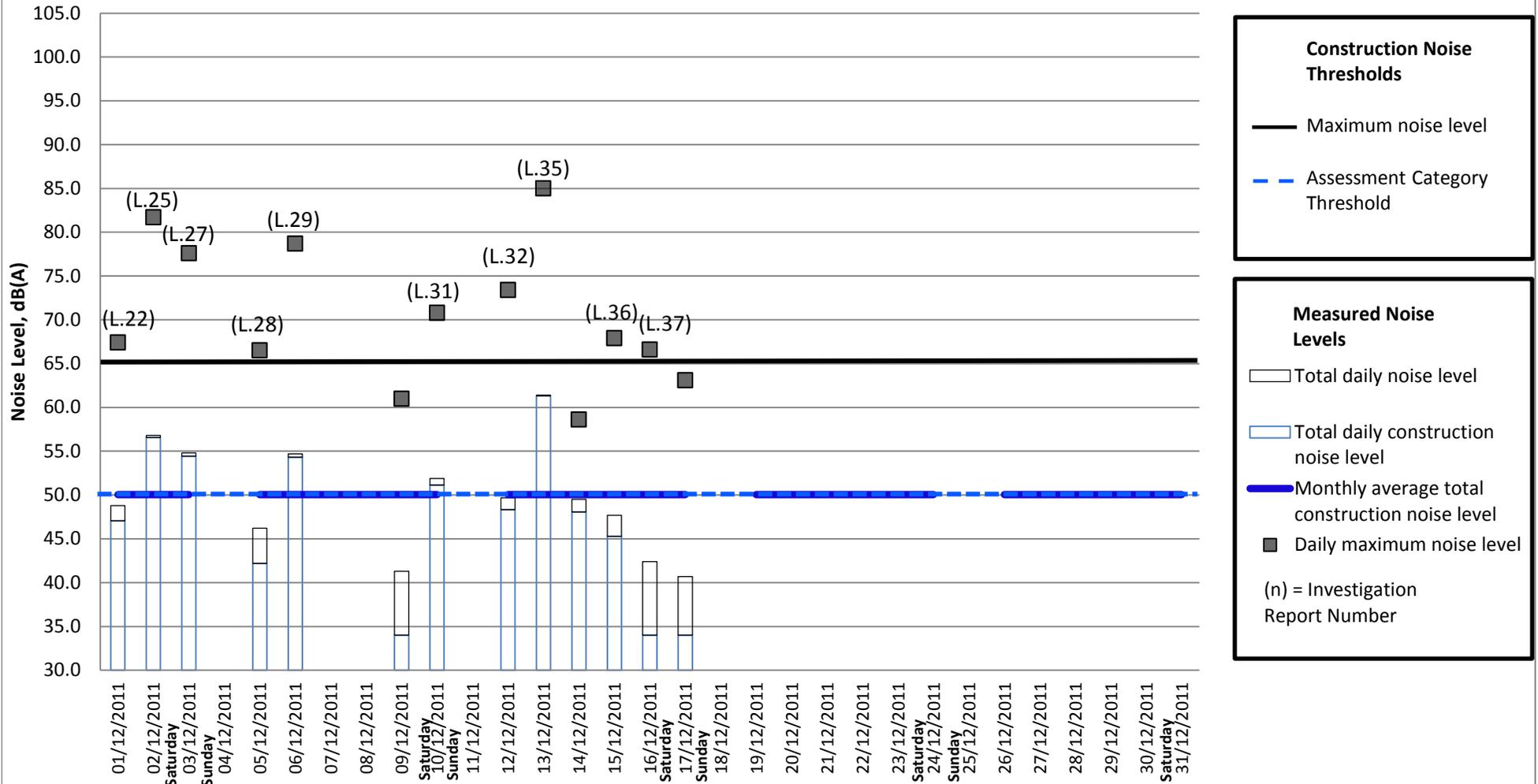
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Daytime noise data is missing for 06/12/11 due to device error. No daytime construction works were conducted on 08/12/11 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

Measured Evening Noise Levels at Linn Mill Measurement period: December 2011



Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Evening noise data is missing for 06/12/11 due to device error. No evening construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No evening construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Night-time Noise Levels at Linn Mill Measurement period: December 2011



Construction Noise Thresholds

— Maximum noise level

- - - Assessment Category Threshold

Measured Noise Levels

□ Total daily noise level

□ Total daily construction noise level

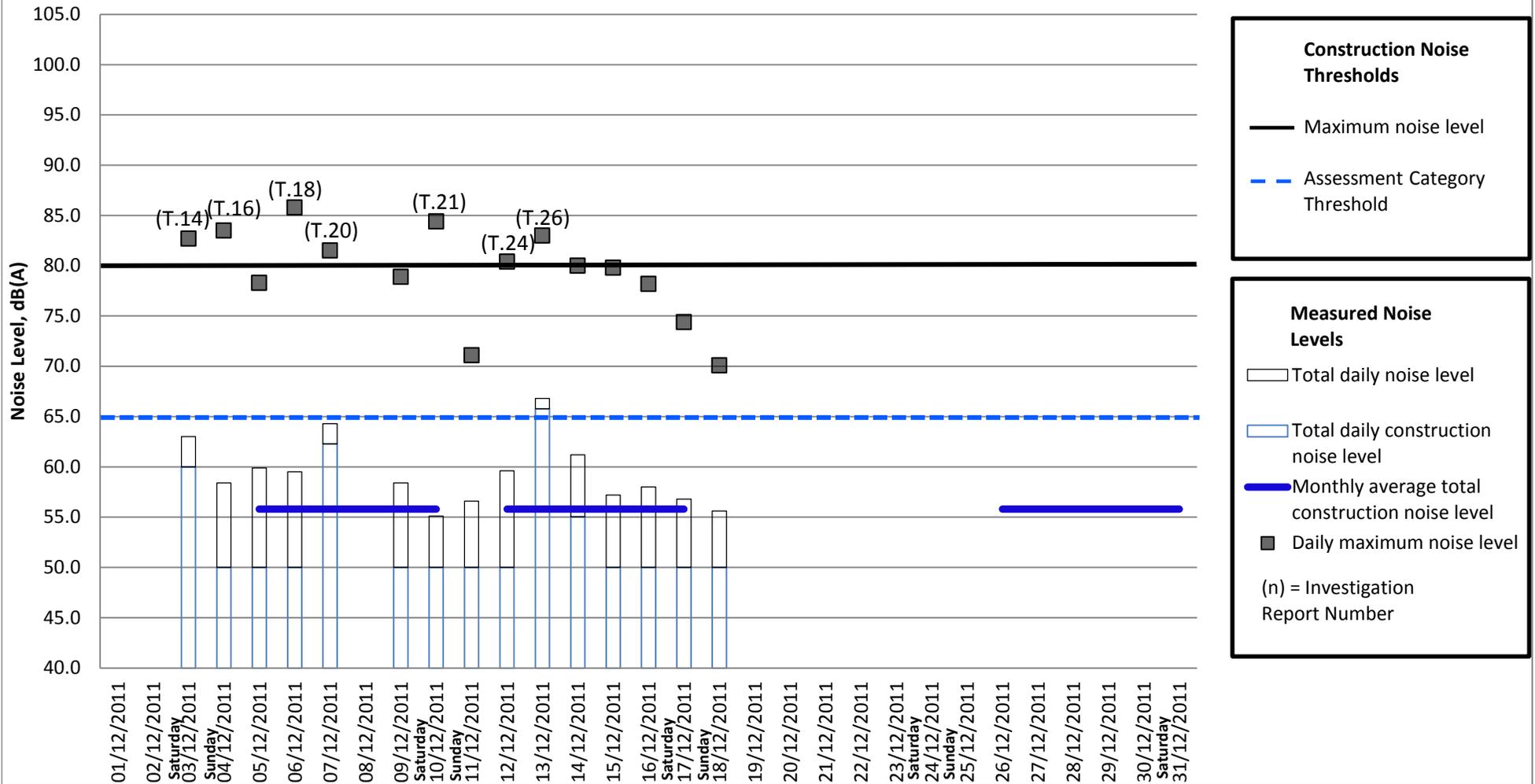
— Monthly average total construction noise level

■ Daily maximum noise level

(n) = Investigation Report Number

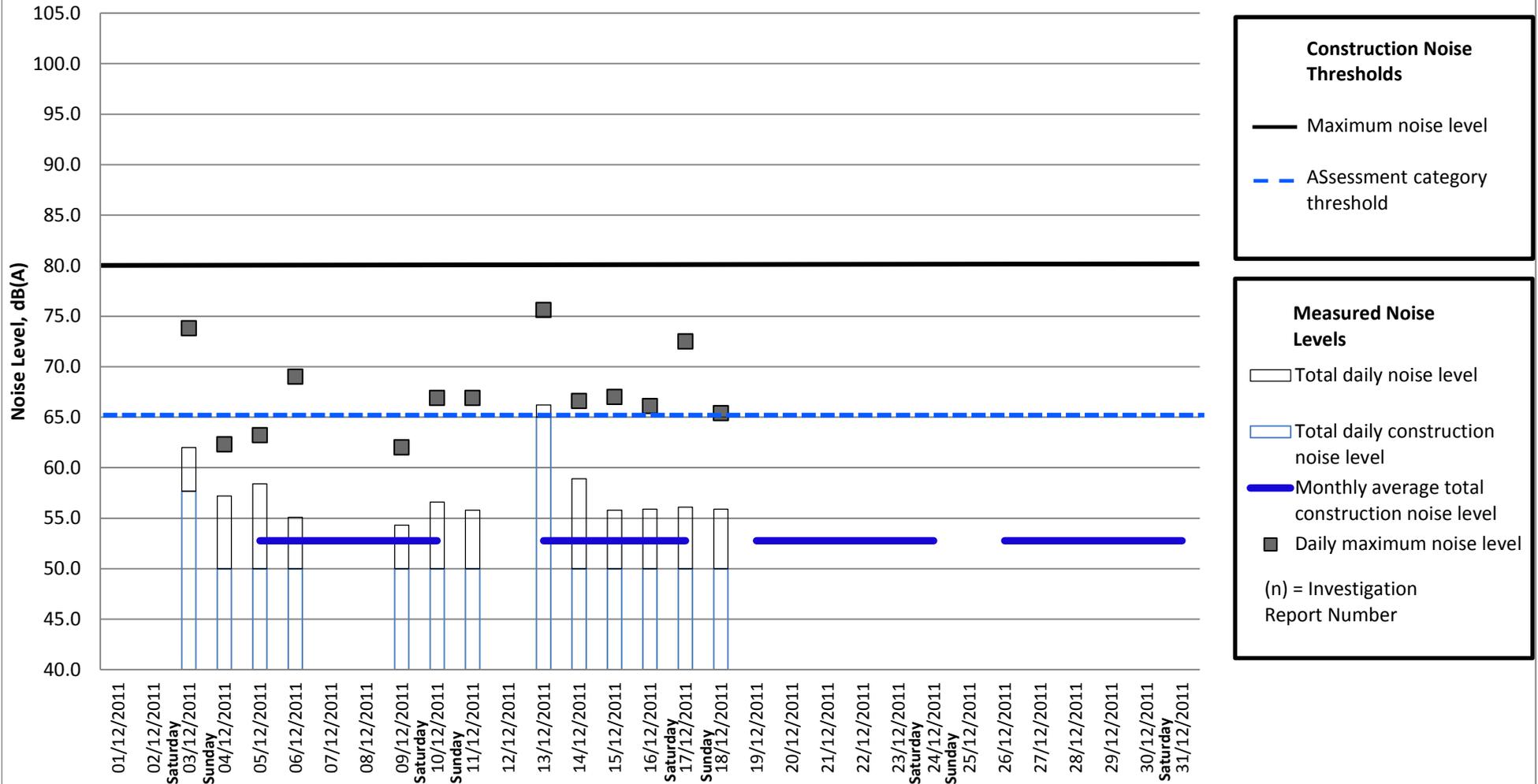
Note: Sunday noise data has not been included as no construction works have been conducted during these hours. No night time construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No night time construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Daytime Noise Levels at Tigh-Na-Grian Measurement period: December 2011



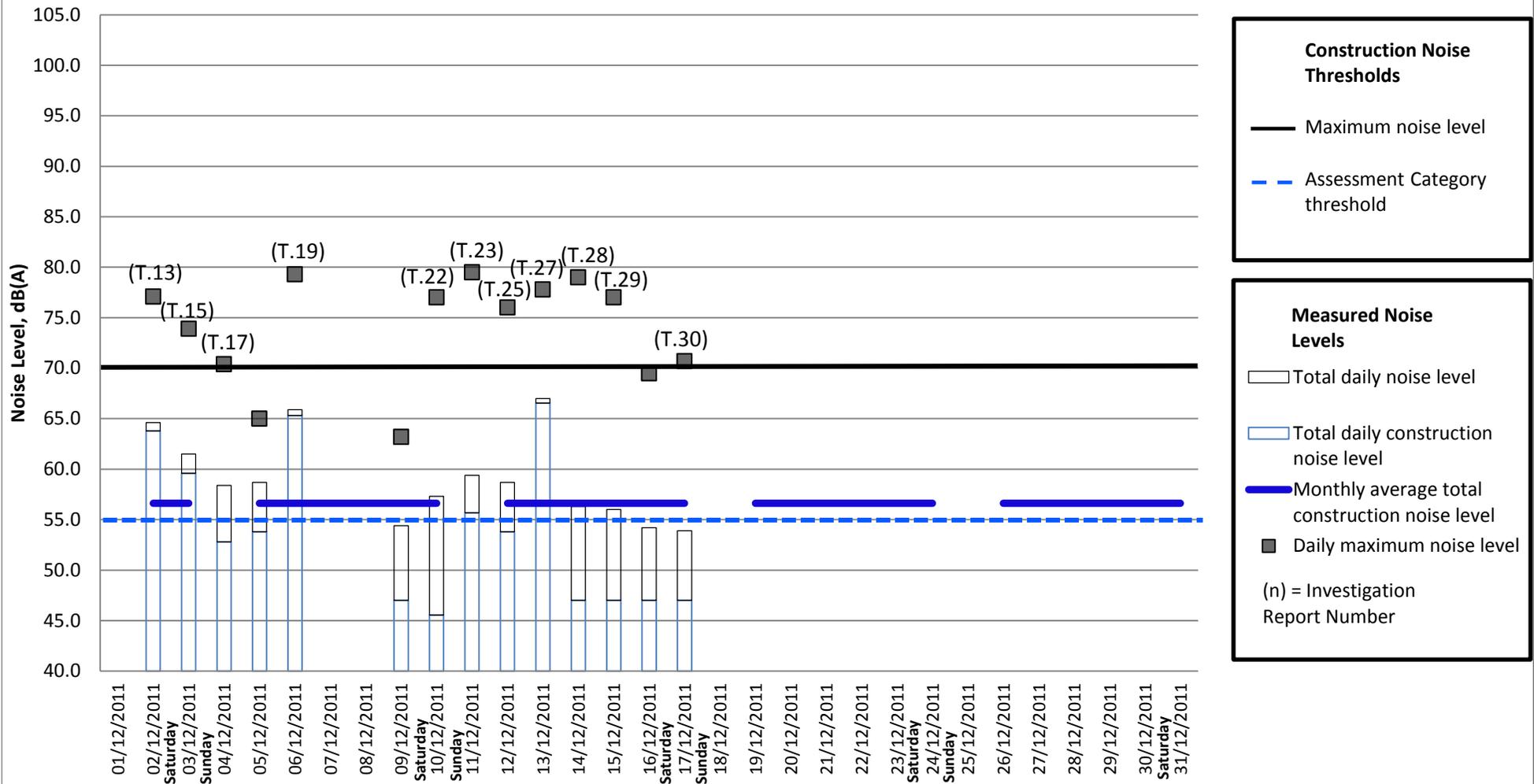
Note: Daytime noise data is missing for 01/12/11, 02/12/11 and the period 19/12/11 to 23/12/11 due to device error. No daytime construction works were conducted on 08/12/2011 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

Measured Evening Noise Levels at Tigh-Na-Grian Measurement period: December 2011



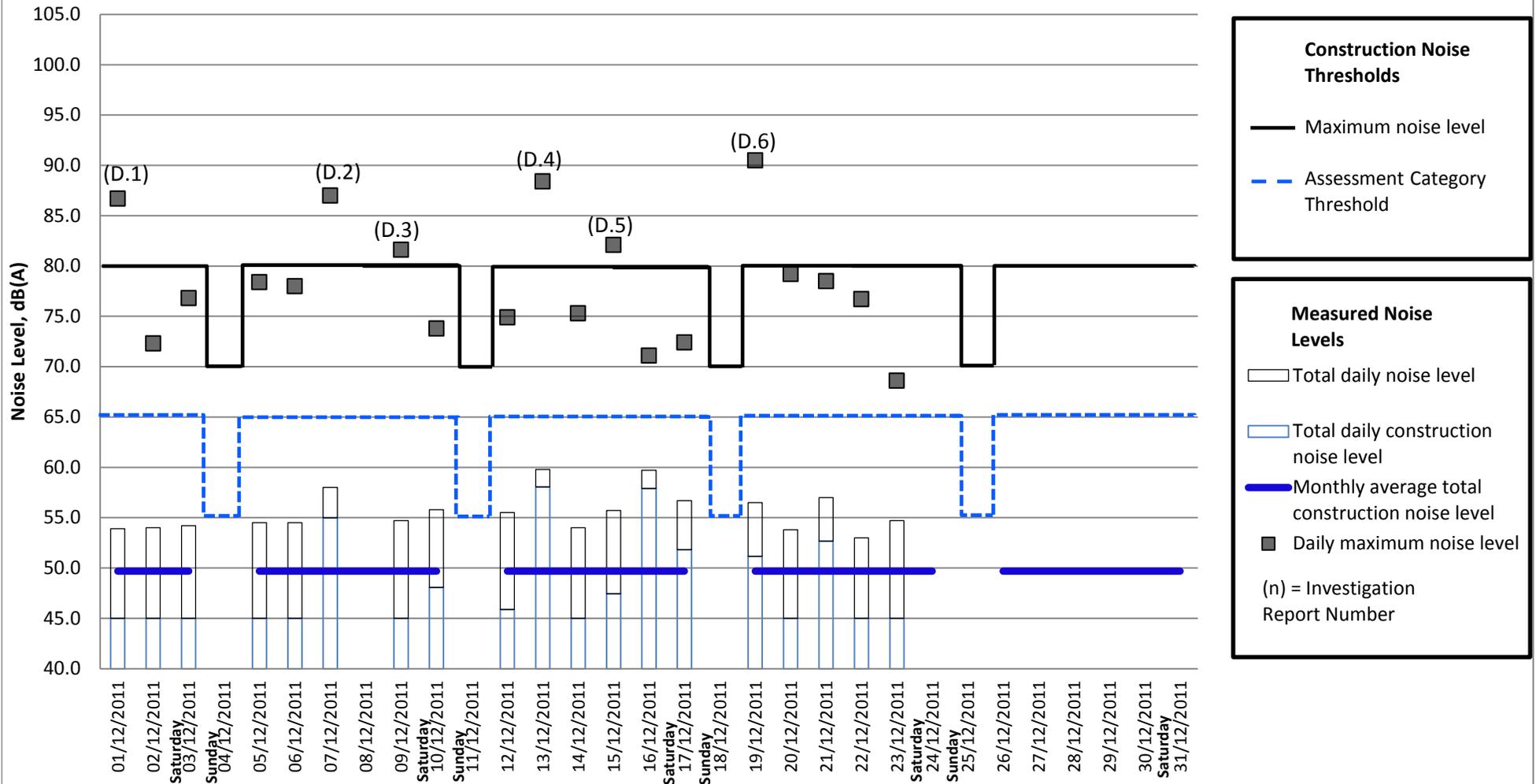
Note: Evening noise data is missing for 01/12/11, 02/12/11 and 12/12/11. No evening construction works were conducted on 07/12/2011 and 08/12/2011 due to adverse weather conditions. No evening construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Night-time Noise Levels at Tigh-Na-Grian Measurement period: December 2011



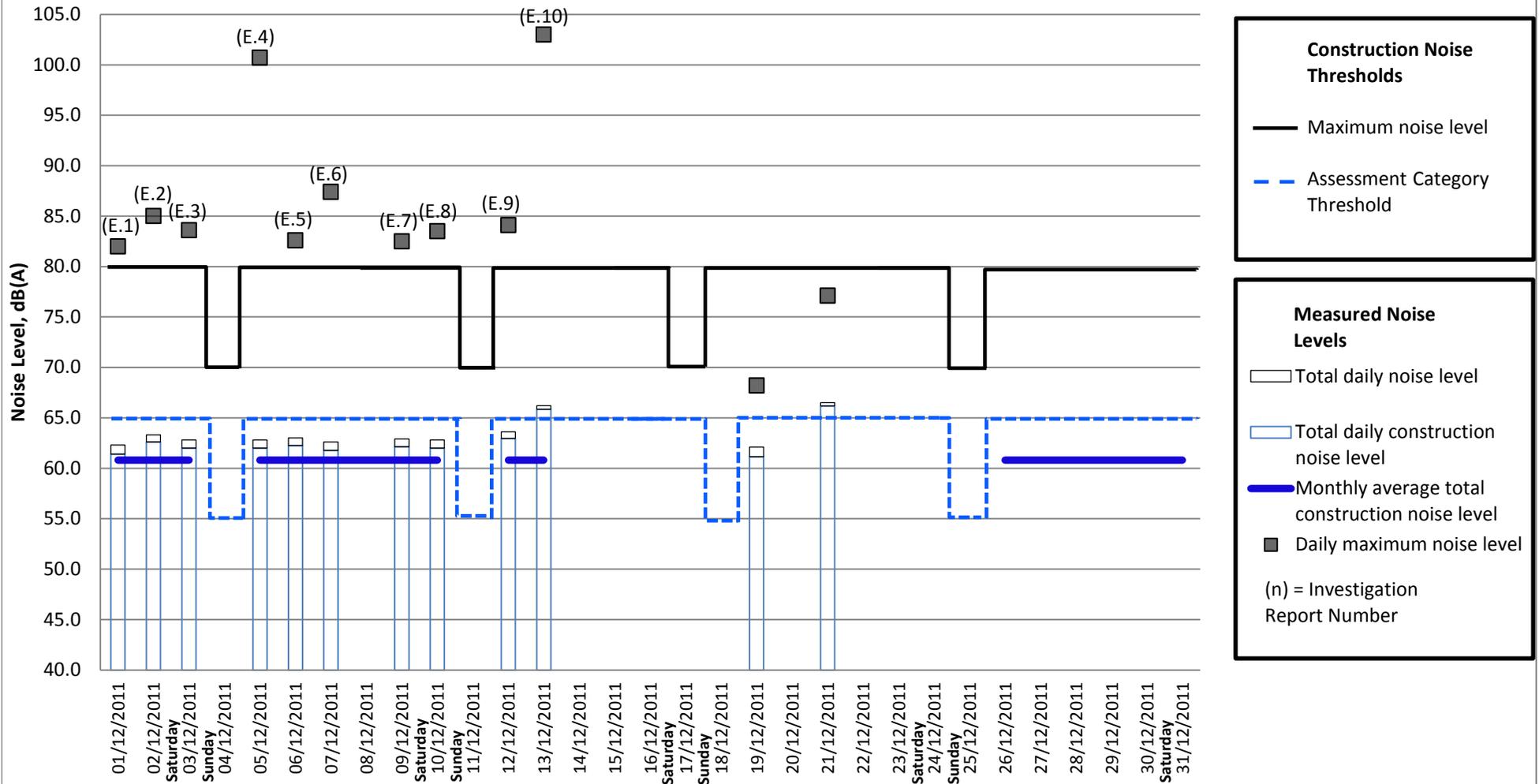
Note: Night time noise data is missing for 01/12/11 and 18/12/11 due to device error. No night time construction works were conducted on 07/12/11 and 08/12/11 due to adverse weather conditions. No night time construction works were conducted over the Christmas period (beginning 19/12/11 to 09/01/12).

Measured Daytime Noise Levels at Dundas Home Farm Measurement period: December 2011



Note: Sunday noise data has not been included as no construction works have been conducted during these hours. No daytime construction works were conducted on 08/12/11 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

Measured Daytime Noise Levels at Echline Field Measurement period: December 2011



Note: Sunday noise data has not been included as no construction works have been conducted during these hours. Daytime noise data is missing for the period 14/12/11 to 18/12/11 and 20/12/11 due to device error. No daytime construction works were conducted on 08/12/11 due to adverse weather conditions. No daytime construction works were conducted over the Christmas period (beginning 24/12/11 to 09/01/12).

APPENDIX B -

**M9 J1A CONTRACT - CONSTRUCTION
NOISE MONITORING REPORTS**

 QUALITY MANAGEMENT SYSTEM	Project Title: FORTH REPLACEMENT CROSSING M9 Junction 1A		Project Number: 208
	Contractor: SRB	Date: 23-12-11	NER. 07
	NOISE EXCEEDENCE REPORT		
Summary of Finding(s): <u>November 2011 – CNV02</u> Exceedences Nos: 51-75 (Maximum Noise Levels: Ranging from 91dB (A) to 105dB (A)) See CNV 2 – Construction Noise Breakdown – Nov 2011 Analysis: From the 1st to 30th November An analysis was carried out using the following data: <ul style="list-style-type: none"> • Recorded Noise Logs and Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Senior Engineer (Roland Tarrant) This analysis has determined that the noise exceedences at Receptor CNV 02 are regular and occur throughout day, evening and night, are of a duration of less than 1.1seconds and are not likely to be construction related. Corrective Action Required: No corrective action required, maintain monitoring regime SignatureRoland Tarrant..... Date23-12-11.....			
NER Closed Works have been inspected and completed as described above. SignatureSeamus O'Brien.....Date23-12-11... Project Manager / Assist Project Manager			



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

The monthly average total construction noise level was within threshold limits.

There were a large number of exceedences of the Maximum noise level threshold limits. These are explained below.

Noise Type:

An analysis of the noise recordings taken during the exceedence periods indicate that the noise is associated with environmental factors and unlikely to be related to the construction works. These include:

- Wind Speed > gusts of >10m/s and/or periods of rainfall
- Existing traffic noise (e.g. loose lorry loads flapping in the wind, lorry horns etc)

For all of these exceedences, the peak noise lasted for less than 1.1 seconds. This, in conjunction with an analysis of the site diary, indicates that the noise was unlikely to be associated with any of the SRB construction activities taking place.

Site Diaries / Weather Data:

Works did not take place in Area 2 and 3 within 300m of the sensitive receptor within the month of November. Works took place in Areas 4 and 5 during this period within 300m of the sensitive receptor, however these were at their closest, 90m away from the receptor and were spread throughout Areas 4 and 5 i.e. not intensive at the closest point to the receptor.

(See drawing attached):

Heavy Rain and or wind was recorded on the following days:

12th November, 23rd November, 25th November, 26th November, 28th November, 29th November

These weather conditions may have influenced some of the readings taken on these dates.

Sunday Works

There were no Sunday Works during this period.

Inspections by Senior Engineer:

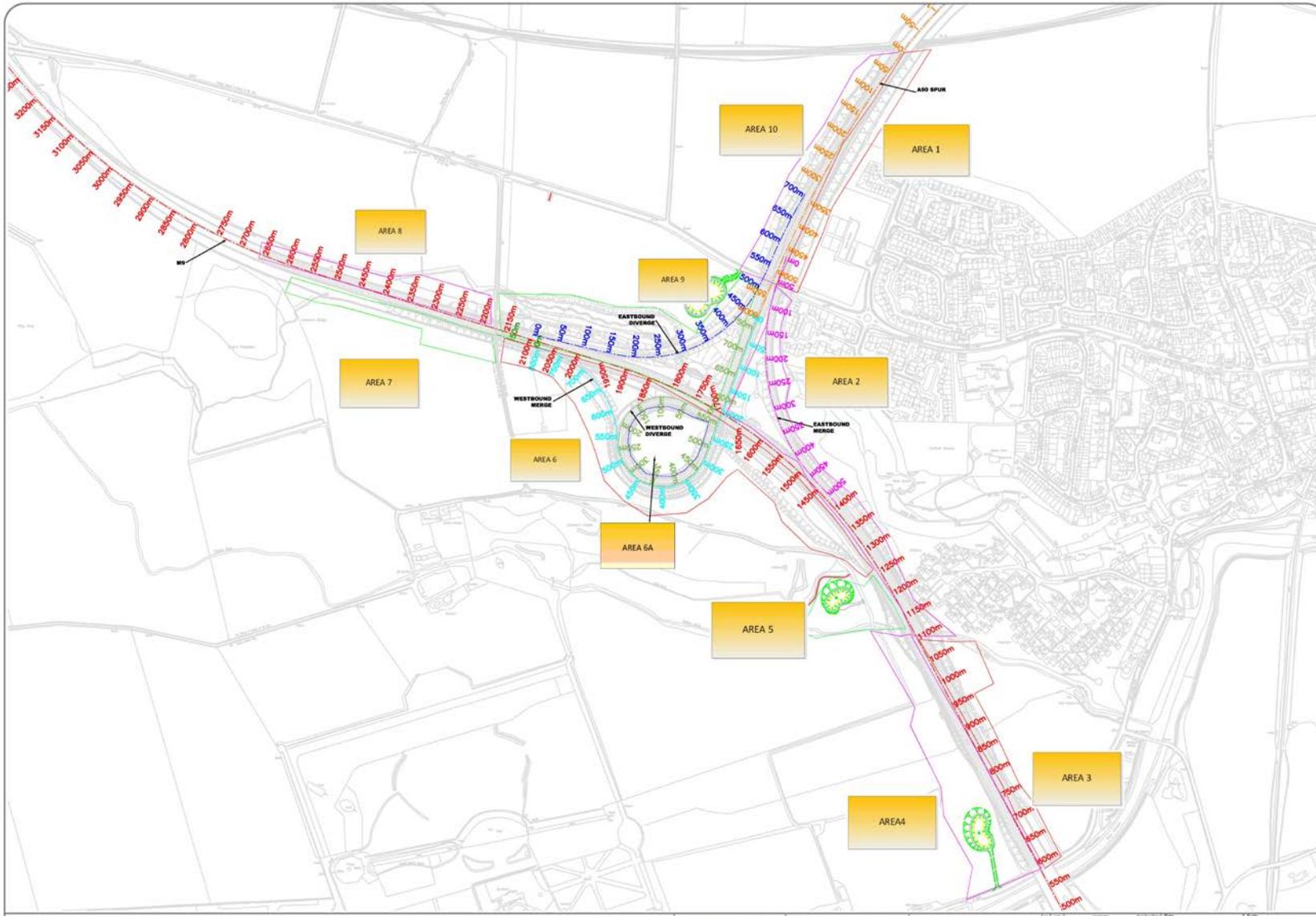
When an exceedence occurred, the process outlined in the Noise and Vibration Management Plan was implemented. A site inspection confirmed that SRB construction works were either not going on in this area or were not contributing to the noise readings.

On the 22nd of November, SRB undertook a letter drop to the dwellings in the immediate vicinity of the Project. These included properties around Gateside and King Edwards Way (where the receptor is located). This gave an update of construction works being undertaken and a freephone number to ring in the event of complaint or request for more information.

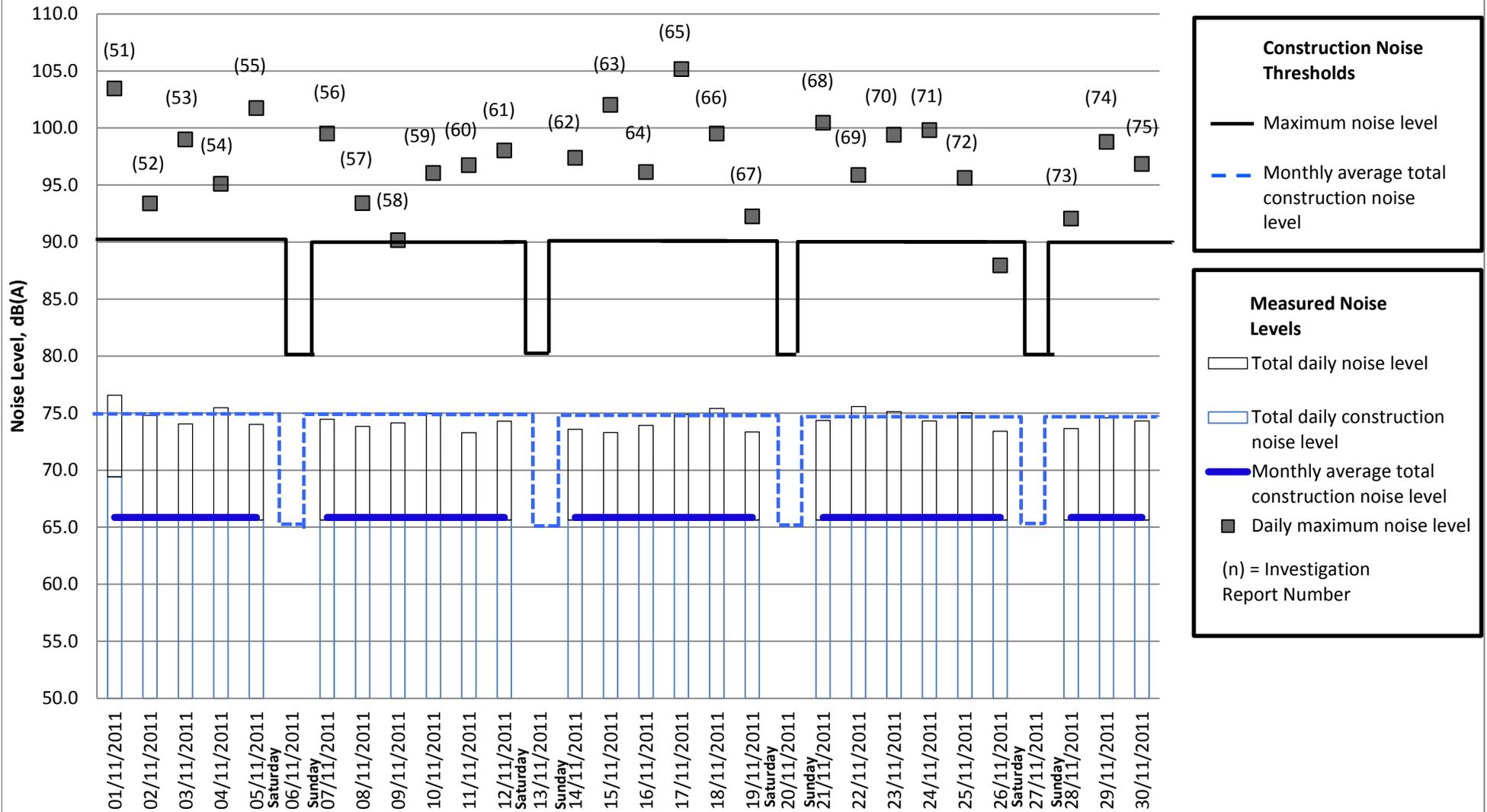
Summary:

Exceedences are likely not to be related to M9J1a construction activities.

In addition, there were no noise related complaints during the month of November



Measured daytime noise levels, 93/95 King Edwards Way (CNV02) 1st November 2011 to 30th November 2011



Sunday data have not been included as no construction works have been conducted during these hours.



Project Title:
**FORTH REPLACEMENT
 CROSSING
 M9 Junction 1A**

Project
 Number:

208

Contractor:
SRB

Date:
23-12-11

NER. 08

**QUALITY MANAGEMENT
 SYSTEM**

NOISE EXCEEDENCE REPORT

Summary of Finding(s): November 2011 – CNV07

Exceedences 76 and 77 (Maximum Noise Levels: Both were at 90-91 dB (A))

See CNV 7 – Construction Noise Breakdown –November 2011

Analysis:

Exceedence 76 – Tuesday 15th November

Works took place at Areas 9 and 10 (125m approx. at the closest point from the sensitive receptor location)

There is no line of sight from these works to the receptor at CNV 07 and the mass of the M9 Spur Embankment means that it is unlikely that noise would penetrate through from the construction works.

Exceedence 44 – Friday 25th November

Works focused on Area 6 and Area 9 (125m approx. at the closest point from the sensitive receptor location)

An analysis was carried out using the following data:

- Noise Data
- Noise type
- Site Diaries / Weather Data
- Inspections by Senior Engineer (Roland Tarrant)

There is no line of sight from these works to the receptor at CNV 07 and the mass of the M9 Spur Embankment means that that it is unlikely that noise would penetrate through from the construction works. In addition, there was heavy rain recorded in the morning of the 25th of November from 10am - 1pm. It is during this time that the peak was recorded. It is possible that this peak was influenced by the inclement weather conditions.

Average total construction noise was below set limits.

Corrective Action Required:

No corrective action required, maintain monitoring regime

SignatureRoland Tarrant.....

Date23-12-11.....

NER Closed

Works have been inspected and completed as described above.

SignatureSeamus O'Brien.....Date23-12-11...

Project Manager / ~~Assist Project Manager~~



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

The monthly average total construction noise level was within threshold limits.

There were two exceedences of the Maximum noise level threshold limits. These are explained below.

Noise Type:

An analysis of the noise data taken during the exceedence periods indicate that the noise is associated with environmental factors unrelated to the construction works i.e. rainfall.

Site Diaries / Weather Data:

The nearest works to the Sensitive Receptor carried out during the exceedence periods were (See drawing attached):

3 rd October - Monday	Breaking and Excavation of Rock in area east of existing M9 Overbridge (Area 6 – No Line of Sight to CNV 7) Site Compound Works (Area 9)
18th October- Tuesday	Breaking and Excavation of Rock in area east of existing M9 Overbridge (Area 6 – No Line of Sight to CNV 7) Construction of haul route around compound area (Area 9) Tree felling – Area 9 and 10

These activities would not have contributed to the noise disturbance at the sensitive receptor location.

Weather Note:

There was very heavy rainfall in the morning and this is expected to have contributed to the maximum noise level recorded at the Sensitive Receptor CNV 07.

Inspections by Senior Engineer:

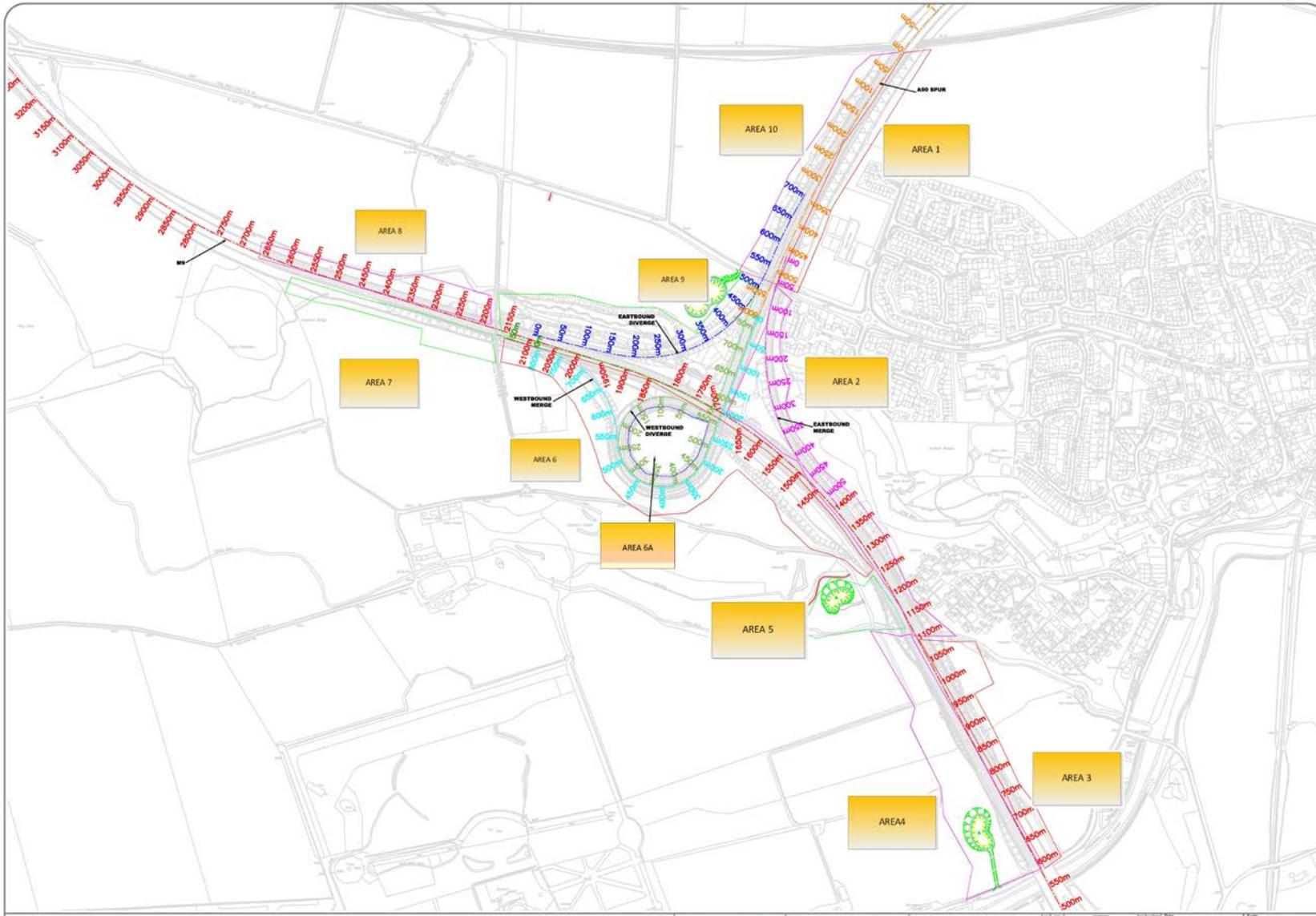
When an exceedence occurred, the process outlined in the Noise and Vibration Management Plan was implemented. A site inspection confirmed that SRB construction works were either not going on in this area or were not contributing to the noise readings.

On the 11th of October, SRB undertook a letter drop to the dwellings in the immediate vicinity of the Project. These included properties around Buie Rigg (where the receptor is located). This gave advanced warning of construction works being undertaken and a freephone number to ring in the event of complaint or request for more information.

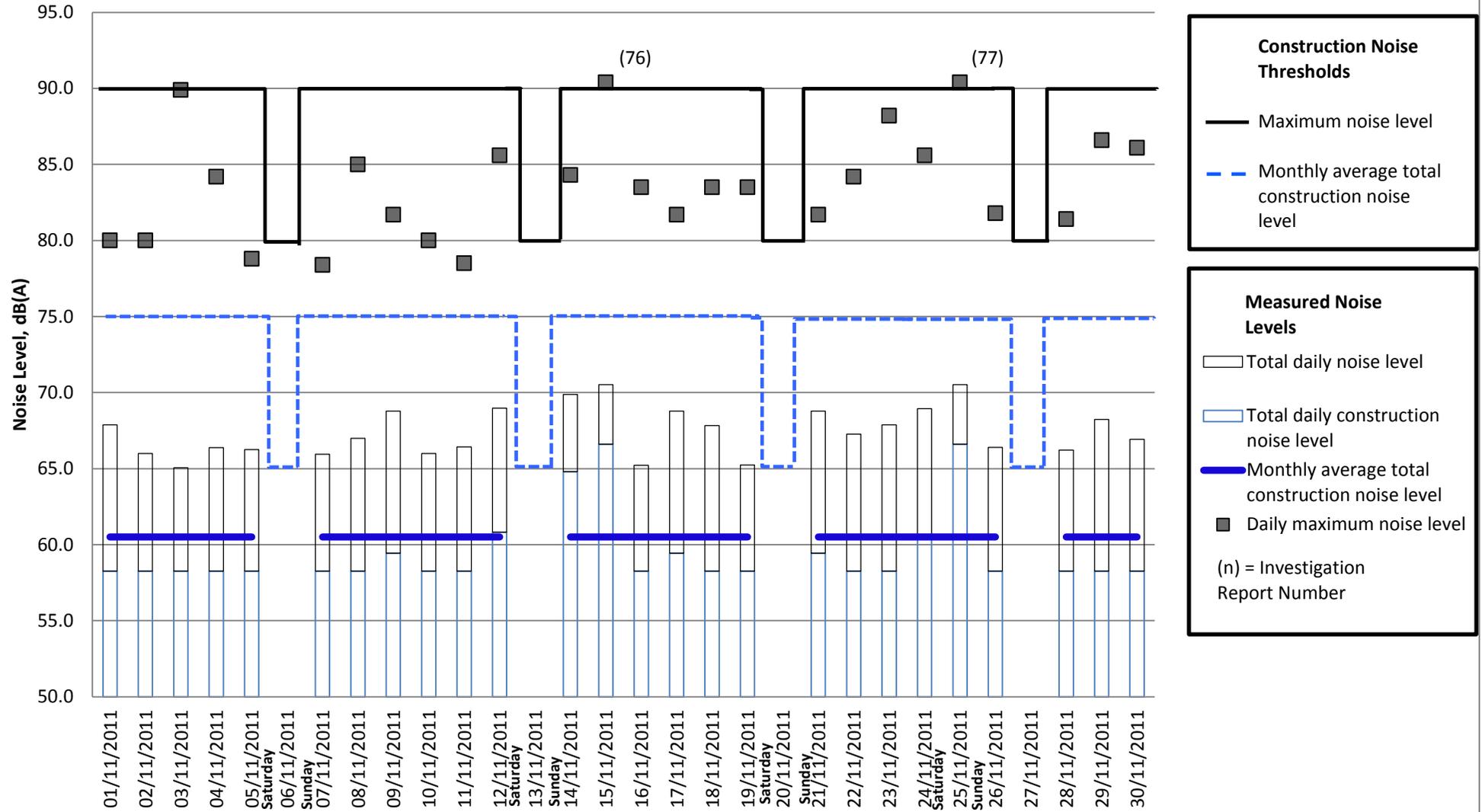
Summary:

Exceedences are not related to M9J1a construction activities and are more likely due to weather conditions prevalent at the time.

In addition, there were no noise related complaints during the month of October



Measured daytime noise levels, 15-17 Buie Rigg (CNV07) 1st November 2011 to 30th November 2011



Sunday data have not been included as no construction works have been conducted during these hours.

 <p>QUALITY MANAGEMENT SYSTEM</p>	Project Title: FORTH REPLACEMENT CROSSING M9 Junction 1A		Project Number: 208
	Contractor: SRB	Date: 23-12-11	NER. 09
	NOISE EXCEEDENCE REPORT		
<p>Summary of Finding(s): <u>November 2011 – CNV16</u></p> <p>Exceedence Nos: 78-84 (Maximum Noise Level: 85-90dB (A)) See CNV 16 – Construction Noise Breakdown – Nov 2011</p> <p>Analysis: Exceedence No: 78-84 – 01st, 5th, 16th, 22nd, 25th, 26th and 29th November Works focused on the compound setup (Area 9) and Area 6 at the Swine Burn. An analysis was carried out using the following data:</p> <ul style="list-style-type: none"> • Recorded Noise Logs and Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Senior Engineer (Roland Tarrant) <p>There is no line of sight from these works to the receptor at CNV 16 and the mass of the M9 Spur Embankment means it is unlikely that noise would penetrate through.</p> <p>Corrective Action Required: No corrective action required, maintain monitoring regime</p> <p>SignatureRoland Tarrant..... Date30-11-11.....</p>			
<p>NER Closed</p> <p>Works have been inspected and completed as described above.</p> <p>SignatureSeamus O'Brien.....Date30-11-11... Project Manager / Assist Project Manager</p>			



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

The monthly average total construction noise level was well within threshold limits.

There were seven exceedences of the Maximum noise level threshold limits. Of the seven exceedences, three were of less than 1dB (A). These would not be considered excessive.

The exceedences are explained below.

Noise Type:

An analysis of the noise recordings taken during the exceedence periods indicate that the noise is associated with environmental factors and unlikely to be related to the construction works. These include:

- Wind Speed > gusts of >10m/s and/or periods of rainfall
- Existing traffic noise (e.g. loose lorry loads flapping in the wind, lorry horns etc)

For all of these exceedences, the peak noise lasted for less than 1.1 seconds. This, in conjunction with an analysis of the site diary, indicates that the noise was unlikely to be associated with any of the SRB construction activities taking place.

Site Diaries / Weather Data:

Prior to November 22nd, works did not take place within Area 1 (See drawing attached) and the nearest works took place in Area 10. At their closest point the works were 180-200m away from the sensitive receptor and it is unlikely that these were

associated with the peak readings. Also, there is no line of sight from these works to the receptor at CNV 16 and the mass of the M9 Spur Embankment means it is unlikely that noise would penetrate through.

After November 22nd site clearance works and ramp construction commenced within Area 1. However these were located more than 300m from the sensitive receptor and it is unlikely that these had an influence on the exceedences.

Weather Note:

Heavy Rain and or wind was recorded on the following days:

12th November, 23rd November, **25th November, 26th November, 28th November, 29th November**

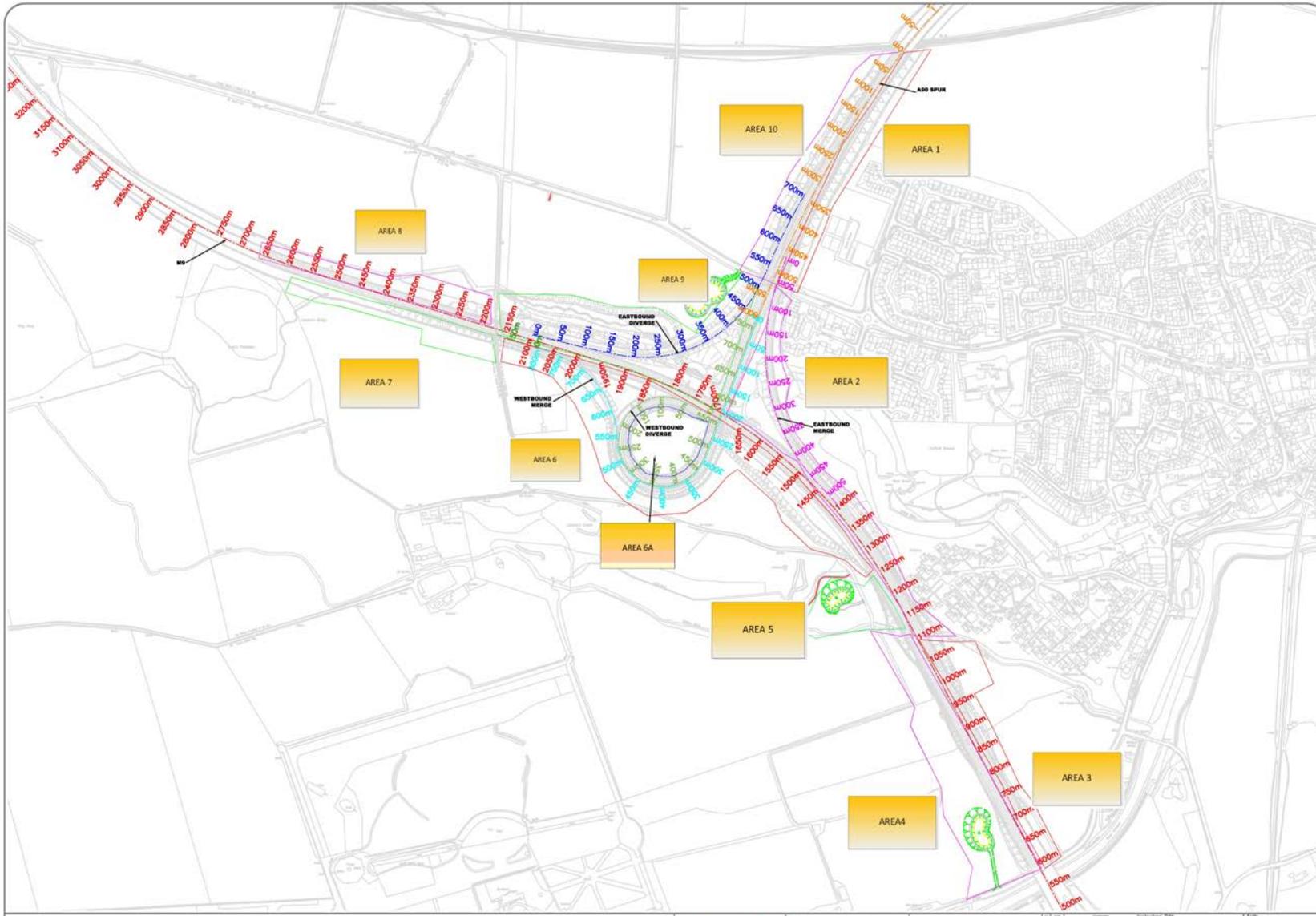
These weather conditions may have influenced some of the readings taken on these dates.

Inspections by Senior Engineer:

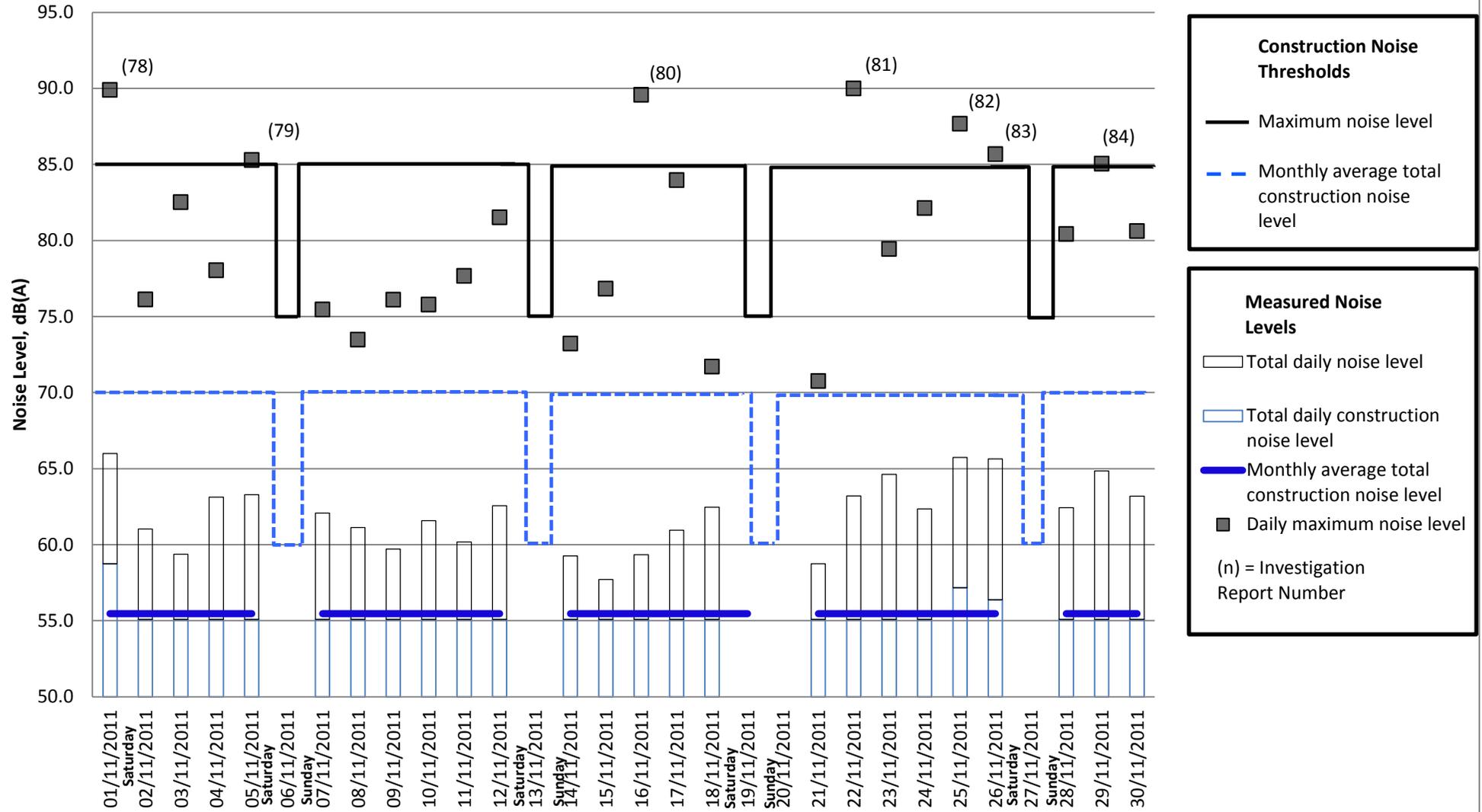
When an exceedence occurred, the process outlined in the Noise and Vibration Management Plan was implemented. A site inspection confirmed that SRB construction works were either not going on in this area or were not contributing to the noise readings.

Summary:

It is likely that exceedences are not related to M9J1a construction activities and are more likely due to weather conditions prevalent at the time.



Measured daytime noise levels, 8 Kirklands Park Grove (CNV16) 1st November 2011 to 30th November 2011



Sunday data have not been included as no construction works have been conducted during these hours.

 QUALITY MANAGEMENT SYSTEM	Project Title: FORTH REPLACEMENT CROSSING M9 Junction 1A		Project Number: 208
	Contractor: SRB	Date: 12-01-12	NER. 10
	NOISE EXCEEDENCE REPORT		
Summary of Finding(s): December 2011 – CNV02 Exceedences Nos: 85-102 (Maximum Noise Levels: Ranging from 95dB (A) to 104dB (A)) See CNV 2 – Construction Noise Breakdown – Dec 2011 Analysis: From the 1st to 23rd December (Site was closed from 23rd Dec for Christmas Shutdown) An analysis was carried out using the following data: <ul style="list-style-type: none"> • Recorded Noise Logs and Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Senior Engineer (Roland Tarrant) This analysis has determined that the noise exceedences at Receptor CNV 02 are regular and occur throughout day, evening and night, are of a duration of less than 1.1seconds and are not likely to be construction related.			
Corrective Action Required: No corrective action required, maintain monitoring regime SignatureRoland Tarrant..... Date12-01-12.....			
NER Closed Works have been inspected and completed as described above. SignatureSeamus O'Brien.....Date12-01-12... Project Manager / Assist Project Manager			



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

The monthly average total construction noise level was within threshold limits.

There were a large number of exceedences of the Maximum noise level threshold limits. These are explained below.

Noise Type:

An analysis of the noise recordings taken during the exceedence periods indicate that the noise is associated with environmental factors and unlikely to be related to the construction works. These include:

- Wind Speed > gusts of >10m/s and/or periods of rainfall
- Existing traffic noise (e.g. loose lorry loads flapping in the wind, lorry horns etc)

For all of these exceedences, the peak noise lasted for less than 1.1 seconds. This, in conjunction with an analysis of the site diary, indicates that the noise was unlikely to be associated with any of the SRB construction activities taking place.

Site Diaries / Weather Data:

Construction works took place in Areas 4 and 5 during this period within 300m of the sensitive receptor and at times were in the immediate vicinity of the receptor area. Works included removing the existing palisade fencing, installing access route along the mainline and site clearance. Works were closely monitored and working times managed in line with the commitments given in the PCNVs for the activities. As pointed out above, none of the exceedences lasted longer than 1.1

seconds – this type of short duration is not generally associated with the activities that took place during this period e.g. a chainsaw operating will last longer than 1.1 seconds.

(See drawing attached):

Heavy Rain and or wind was recorded on the following days:

7th December, 8th December, 12th December, 13th December, 19th December,

These weather conditions may have influenced some of the readings taken on these dates.

Sunday Works

There were no Sunday Works during this period.

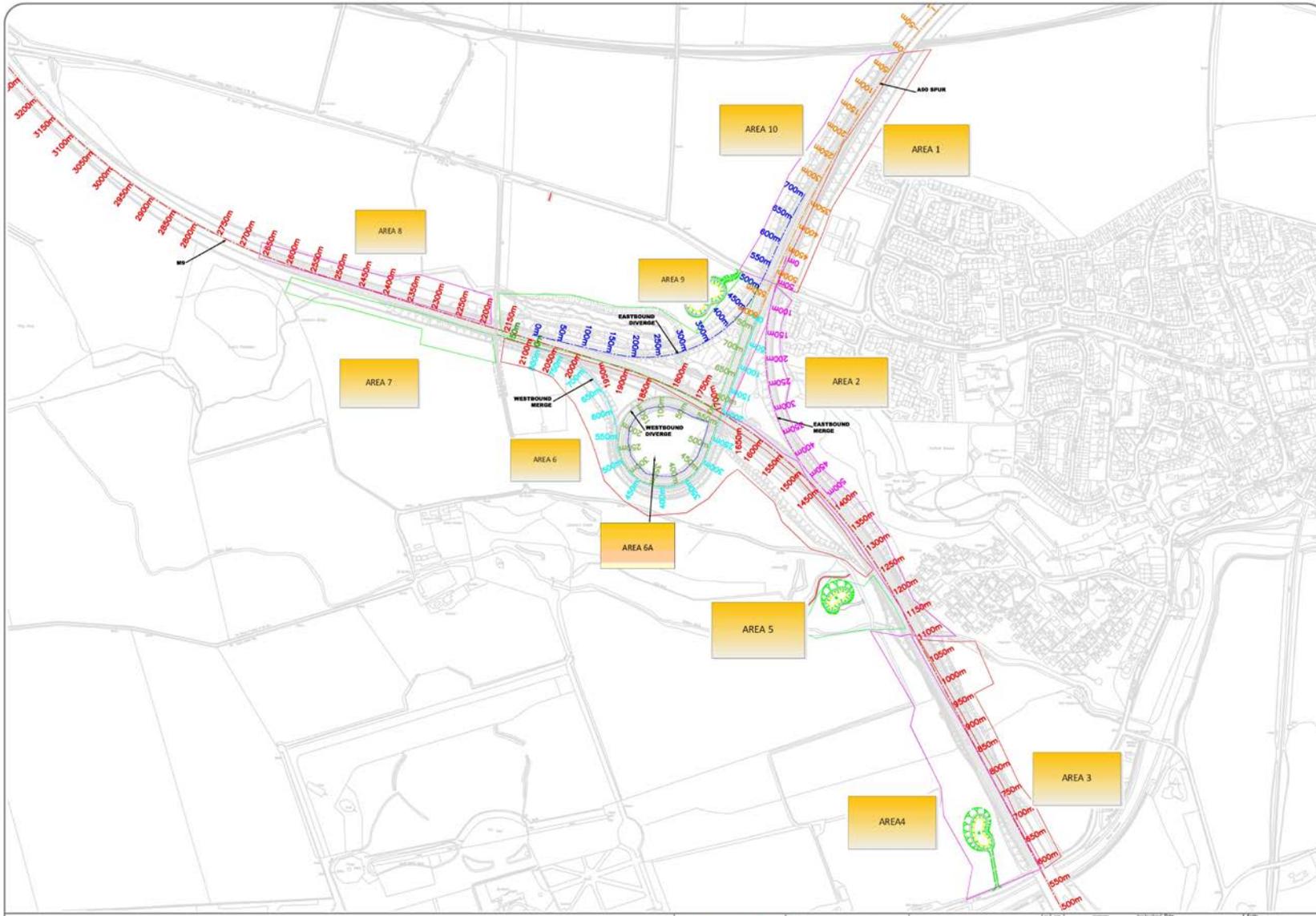
Inspections by Senior Engineer:

When an exceedence occurred, the process outlined in the Noise and Vibration Management Plan was implemented. A site inspection confirmed that SRB construction works were either not going on in this area or were not contributing to the noise readings.

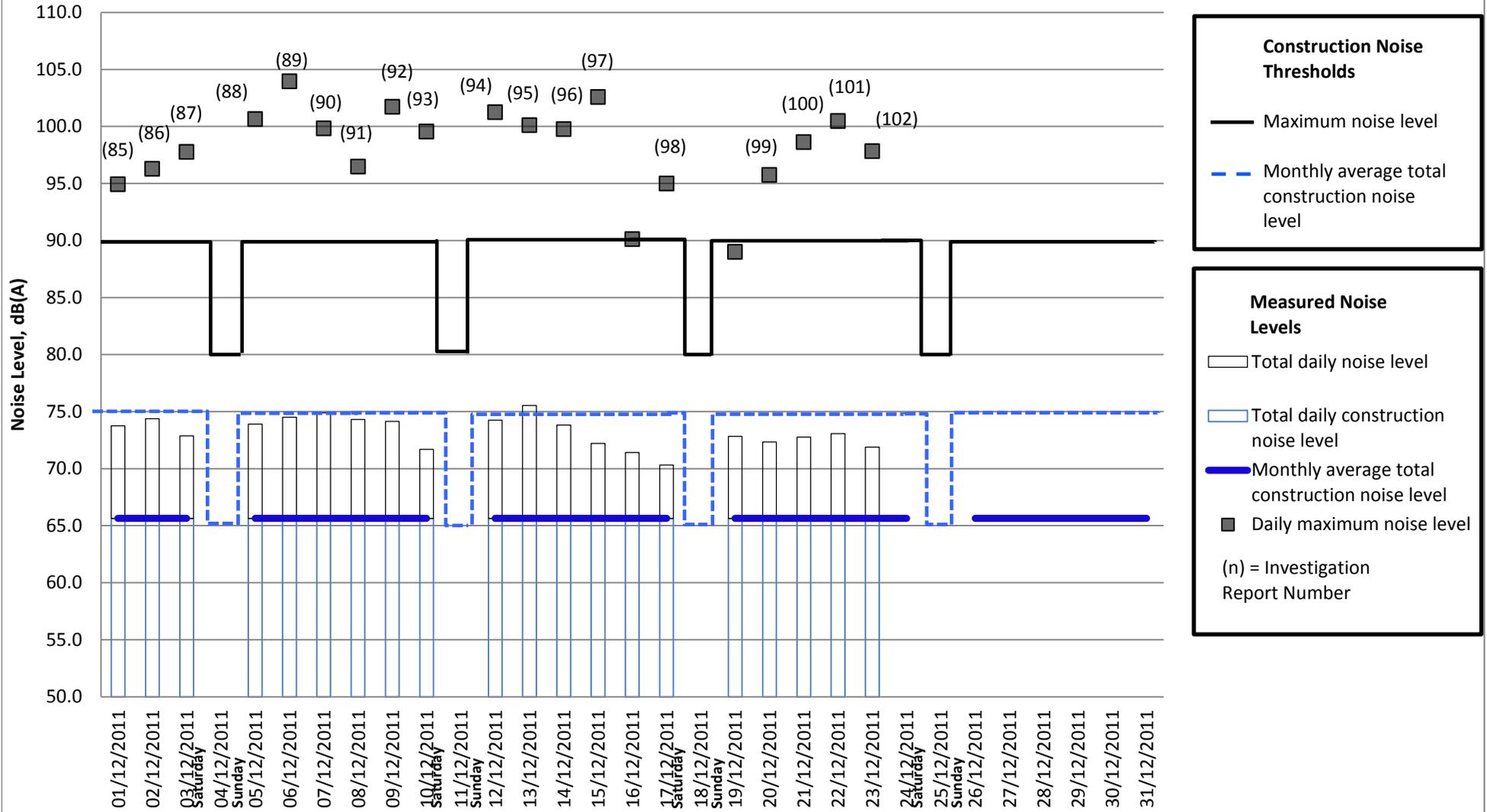
Summary:

Exceedences are likely not to be related to M9J1a construction activities.

In addition, there were no noise related complaints from this sensitive receptor area, during the month of December.



Measured daytime noise levels, 93/95 King Edwards Way (CNV02) 1st December 2011 to 31st December 2011



Sunday data have not been included as no construction works have been conducted during these hours.

 <p>QUALITY MANAGEMENT SYSTEM</p>	Project Title: FORTH REPLACEMENT CROSSING M9 Junction 1A		Project Number: 208
	Contractor: SRB	Date: 12-01-12	NER. 11
	NOISE EXCEEDENCE REPORT		
<p>Summary of Finding(s): <u>December 2011 – CNV07</u></p> <p>Exceedences 103-107 (Maximum Noise Levels: Ranging from 90.1-97.5 dB (A))</p> <p>See CNV 7 – Construction Noise Breakdown –December 2011</p> <p>Analysis:</p> <p>Exceedence 103 – Tuesday 8th December</p> <p>Works took place at Areas 9 and 10 (125m approx. at the closest point from the sensitive receptor location)</p> <p>There is no line of sight from these works to the receptor at CNV 07 and the mass of the M9 Spur Embankment means that it is unlikely that noise would penetrate through from the construction works.</p> <p>Exceedence 104 – Friday 9th December</p> <p>Works focused on Area 10 (100m approx. at the closest point from the sensitive receptor location)</p> <p>An analysis was carried out using the following data:</p> <ul style="list-style-type: none"> • Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Senior Engineer (Roland Tarrant) <p>Works to accommodate sheet piling to the West of Newmains Bridge took place during this period, however works were intermittent the exceedence is less than 0.1dB (A). This is not considered significant.</p> <p>Exceedence 105 – Tuesday 13th December</p> <p>Works focused on Area 6, Area 9 and Area 10 (125m approx. at the closest point from the sensitive receptor location)</p> <p>An analysis was carried out using the following data:</p> <ul style="list-style-type: none"> • Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Senior Engineer (Roland Tarrant) <p>There is no line of sight from these works to the receptor at CNV 07 and the mass of the M9 Spur Embankment means that that it is unlikely that noise would penetrate through from the construction works. The exceedence is less than 0.1dB (A). This is not considered significant.</p>			

Exceedence 106 – Tuesday 20th December

There were no works carried out within 300m of the sensitive receptor location on this date. Some material was loaded from Area 9 and sent along the ramp to Gantry Location G13 via Area 10. This area is largely out of the line of sight from the receptor and it is unlikely this activity resulted in the exceedence as its closed point is approx.. 125m from the receptor location. The exceedence is less than 0.1dB (A). This is not considered significant.

Exceedence 107 – Wednesday 21th December

There were no works carried out within 300m of the sensitive receptor location on this date. Some material was loaded from Area 9 and sent along the ramp to Gantry Location G13 via Area 10. This area is largely out of the line of sight from the receptor and it is unlikely this activity resulted in the exceedence as its closed point is approx.. 125m from the receptor location

Corrective Action Required:

No corrective action required, maintain monitoring regime

SignatureRoland Tarrant.....

Date12-01-12.....

NER Closed

Works have been inspected and completed as described above.

SignatureSeamus O'Brien.....Date12-01-12...

Project Manager / ~~Assist Project Manager~~



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

The monthly average total construction noise level was within threshold limits.

There were five exceedences of the Maximum noise level threshold limits. These are explained below.

Noise Type:

An analysis of the noise data taken during the exceedence periods indicate that the noise is associated with environmental factors unrelated to the construction works i.e. rainfall.

Three of the exceedences were just over the 90dB (A) limit - 90.1dB(A). These are not considered significant.

Site Diaries / Weather Data:

See above for references to Site Diaries

Weather Note:

Heavy Rain and or wind was recorded on the following days:

7th December, 8th December, 12th December, 13th December, 19th December,

These weather conditions may have influenced some of the readings taken on these dates.

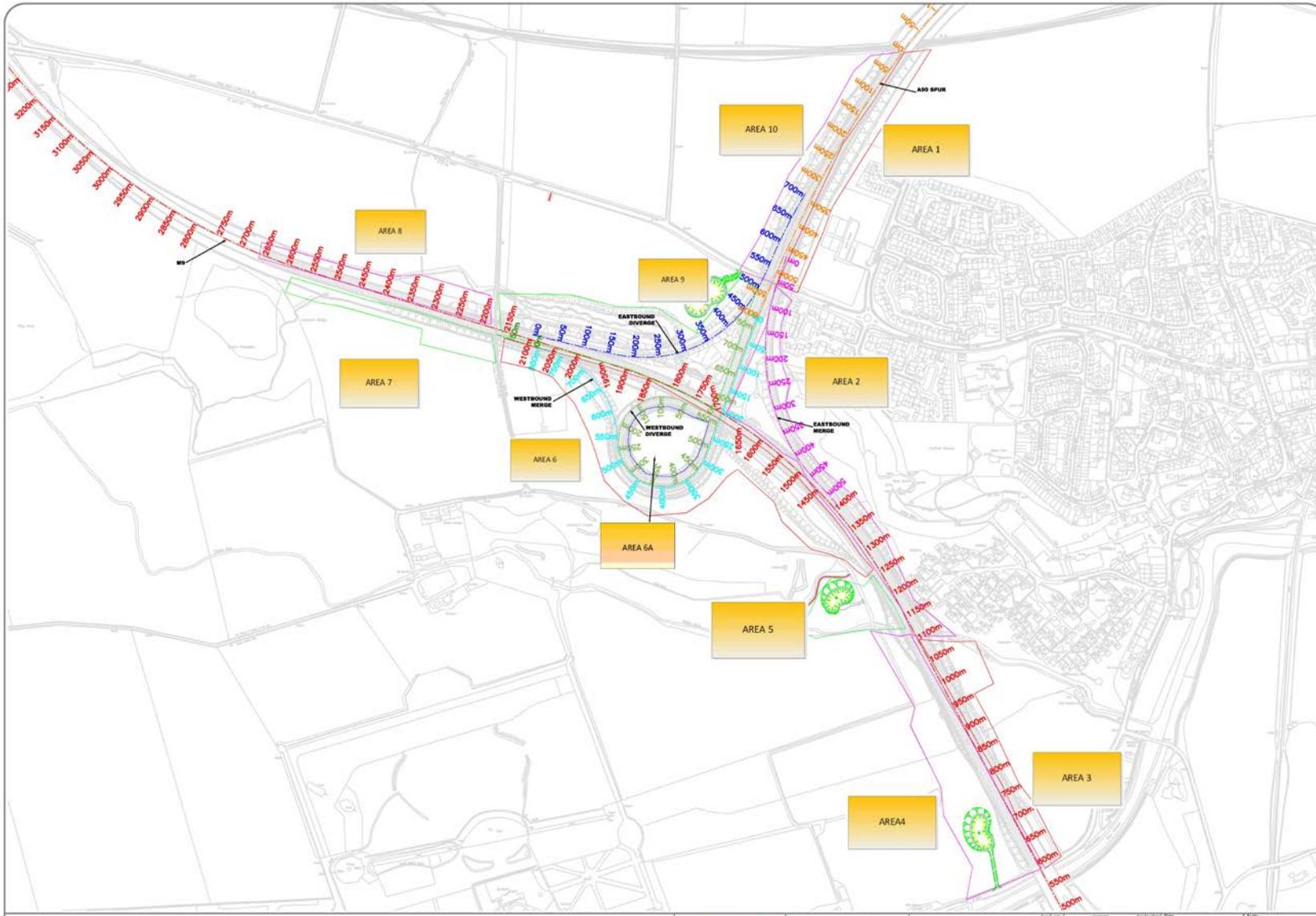
Inspections by Senior Engineer:

When an exceedence occurred, the process outlined in the Noise and Vibration Management Plan was implemented. A site

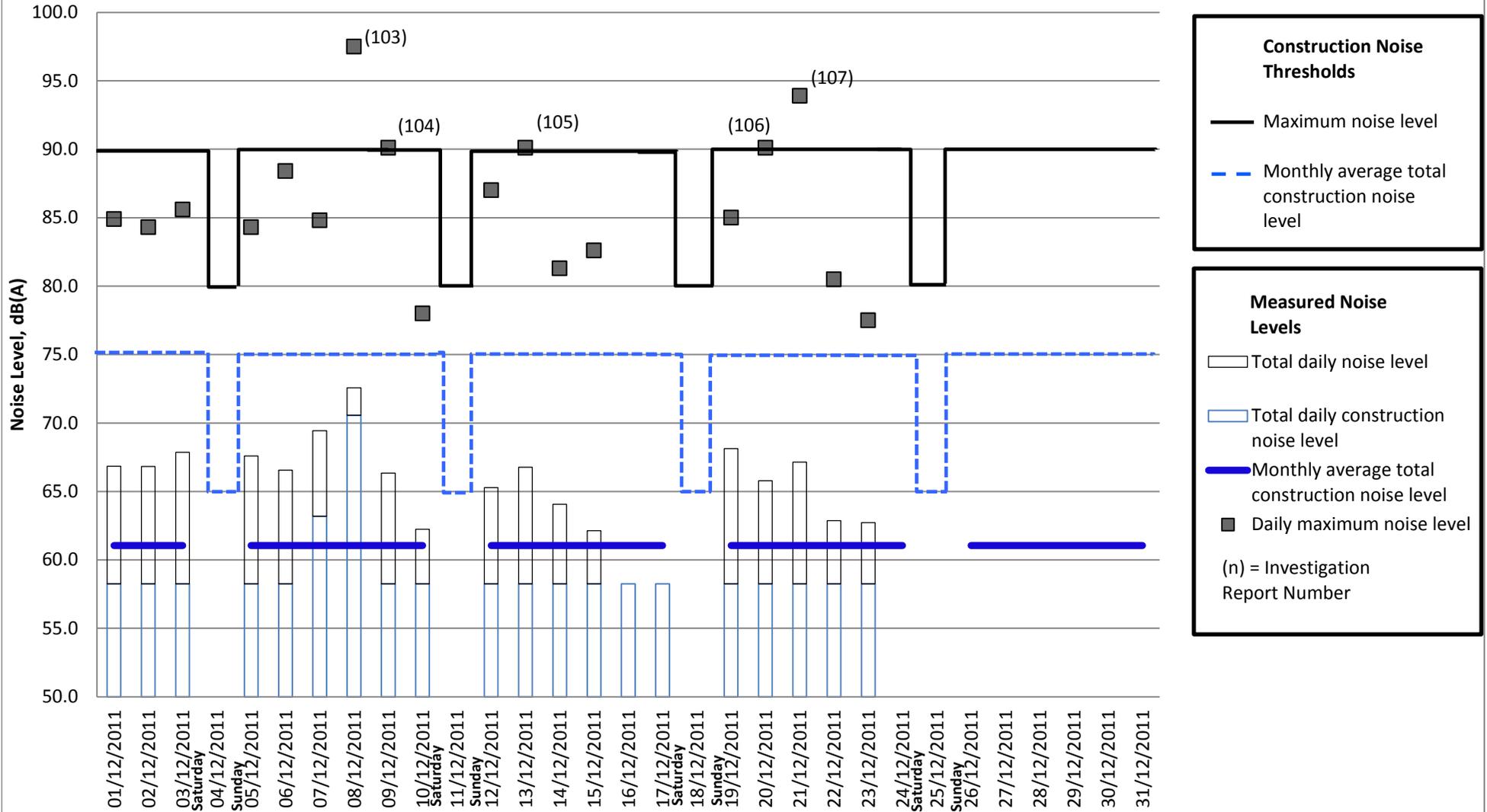
inspection confirmed that SRB construction works were either not going on in this area or were not contributing to the noise readings.

Summary:

Exceedences are unlikely to be related to M9J1a construction activities and are more likely due to weather conditions prevalent at the time.



Measured daytime noise levels, 15-17 Buie Rigg (CNV07) 1st December 2011 to 31st December 2011



Sunday data have not been included as no construction works have been conducted during these hours.

 QUALITY MANAGEMENT SYSTEM	Project Title: FORTH REPLACEMENT CROSSING M9 Junction 1A		Project Number: 208
	Contractor: SRB	Date: 13-01-12	NER. 12
	NOISE EXCEEDENCE REPORT		
<p>Summary of Finding(s): <u>December 2011 – CNV16</u></p> <p>Exceedence Nos: 108-116 (Maximum Noise Level: 85.2-94.4dB (A)) See CNV 16 – Construction Noise Breakdown – December 2011</p> <p>Analysis: Exceedence No: 108-116 – 01st, 5th, 6th, 7nd, 8th, 10th, 13th, 15th and 17th December Works focused on the compound setup (Area 9) and Area 6 at the Swine Burn. An analysis was carried out using the following data:</p> <ul style="list-style-type: none"> • Recorded Noise Logs and Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Senior Engineer (Roland Tarrant) <p>Findings: There is no line of sight from most of the works to the receptor at CNV 16 and the mass of the M9 Spur Embankment means it is unlikely that noise would penetrate through. Weather conditions are likely to have played a part in some of the exceedence events. None of the exceedences lasted for more than 1.1 seconds, indicating that it is unlikely that they occurred as a result of construction activities taking place.</p> <p>Corrective Action Required: No corrective action required, maintain monitoring regime</p> <p>SignatureRoland Tarrant..... Date13-01-12.....</p>			
<p>NER Closed</p> <p>Works have been inspected and completed as described above.</p> <p>SignatureSeamus O'Brien.....Date13-01-12... Project Manager / Assist Project Manager</p>			



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

The monthly average total construction noise level was well within threshold limits.

There were eight exceedences of the Maximum noise level threshold limits. Of the seven exceedences, one (5th December) was less than 1dB (A). This <1dB (A) would not be considered excessive.

The exceedences are explained below.

Noise Type:

An analysis of the noise recordings taken during the exceedence periods indicate that the noise is associated with environmental factors and unlikely to be related to the construction works. These include:

- Wind Speed > gusts of >10m/s and/or periods of rainfall
- Existing traffic noise (e.g. loose lorry loads flapping in the wind, lorry horns etc)

For all of these exceedences, the peak noise lasted for less than 1.1 seconds. This, in conjunction with an analysis of the site diary, indicates that the noise was unlikely to be associated with any of the SRB construction activities taking place.

Site Diaries / Weather Data:

1st December

Testing of CFA Pile at top of ramp on west side of M9 Spur (Area 10) approx. 225m from the sensitive receptor.

Construction of ramp to east side of M9 Spur (Area 1) >300m from the sensitive receptor.

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx. 125m from the sensitive receptor at its closest point.

None of these activities were likely to have contributed to the exceedences during this period.

05th December

Earthworks to Gantry 13 >300m from the sensitive receptor

Construction of ramp to east side of M9 Spur (Area 1) >300m from the sensitive receptor.

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx. 125m from the sensitive receptor at its closest point.

None of these activities were likely to have contributed to the exceedences (<1dB(A)) during this period.

06th December

Some sheetpiling works on Newmains Bridge (Vibrated in) >300m from the sensitive receptor.

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx. 125m from the sensitive receptor at its closest point.

None of these activities were likely to have contributed to the exceedences during this period.

07th December

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx.

125m from the sensitive receptor at its closest point.

These activities were likely to have contributed to the exceedences during this period.

08th December

Site activities were very limited on this day due to very strong storm conditions forecast for the Central **Belt**

10th December

Area 1 -Construction of ramp to M9 Spur in Area 1 > 300m from the sensitive receptor

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx. 125m from the sensitive receptor at its closest point.

None of these activities were likely to have contributed to the exceedences during this period.

13th December

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx. 125m from the sensitive receptor at its closest point.

These activities were likely to have contributed to the exceedences during this period.

15th December

Trafficking along the access ramp from area 9, through area 10 and along the NB Hard Shoulder of the M9 Spur – approx. 125m from the sensitive receptor at its closest point.

These activities were likely to have contributed to the exceedences during this period.

17th December

No Works in apart from Compound activities (>300m from the sensitive receptor) took place on this Saturday.

Weather Note:

Heavy Rain and or wind was recorded on the following days:

7th December, 8th December, 12th December, 13th December, 19th December,

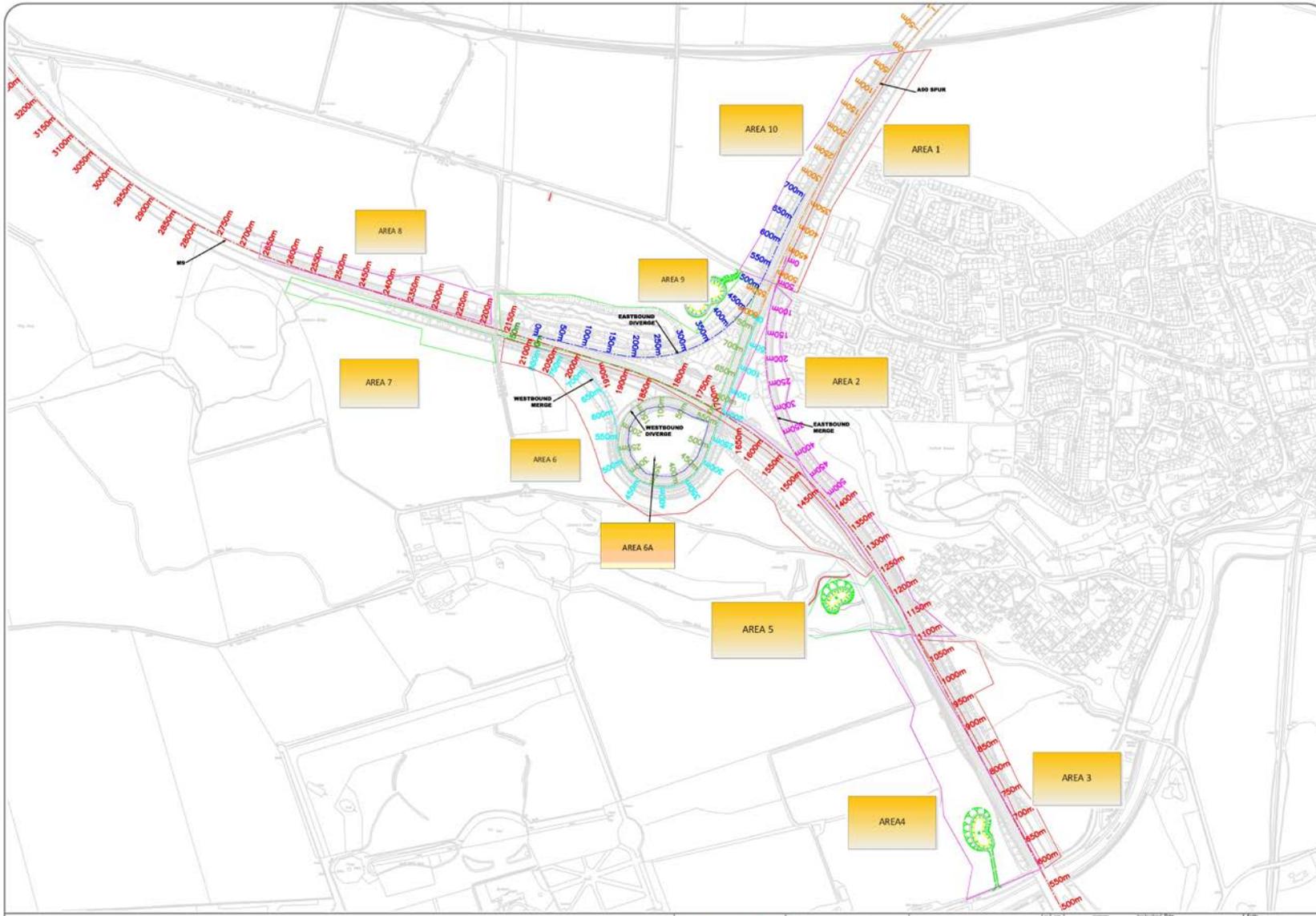
These weather conditions may have influenced some of the readings taken on these dates.

Inspections by Senior Engineer:

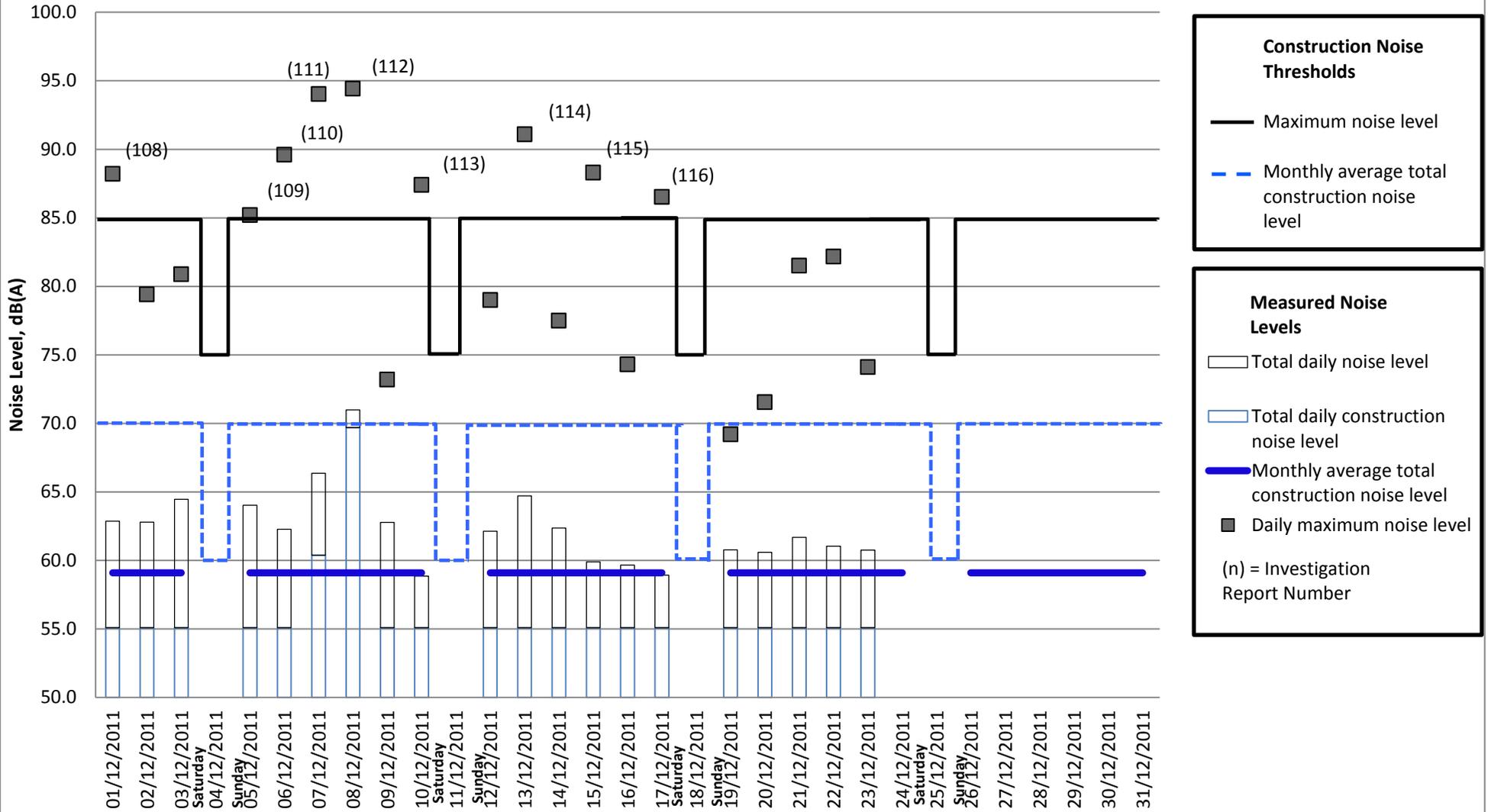
When an exceedence occurred, the process outlined in the Noise and Vibration Management Plan was implemented. A site inspection confirmed that SRB construction works were either not going on in this area or were not contributing to the noise readings.

Summary:

It is likely that exceedences are not related to M9J1a construction activities and are more likely due to weather conditions prevalent at the time.



Measured daytime noise levels, 8 Kirklands Park Grove (CNV16) 1st December 2011 to 31st December 2011



Sunday data have not been included as no construction works have been conducted during these hours.

 QUALITY MANAGEMENT SYSTEM	Project Title: FORTH REPLACEMENT CROSSING M9 Junction 1A		Project Number: 208
	Contractor: SRB	Date: 23-12-11	NER. 13
	NOISE EXCEEDENCE REPORT		
Summary of Finding(s): 13th December 2011 – CNV7 and CNV 16 <p>Exceedence Nos: 117 (Maximum Noise Level: 80.1 – 87.8 dB (A) between 12am and 12.30am on Tuesday morning 13th December.</p> <p>In addition a complaint was received from a resident of Buie Rigg about disturbance from the works</p> <p>See CNV 7 – Construction Noise Breakdown – 12th December 2011 Night</p> <p>See CNV 16 – Construction Noise Breakdown – 12th December 2011 Night</p> <p>Analysis:</p> <p>Exceedence No: 117 12th December</p> <p>Traffic management layout of Varioguard barrier was being carried out, along with some linemarking operations.</p> <p>An analysis was carried out using the following data:</p> <ul style="list-style-type: none"> • Recorded Noise Logs and Noise Data • Noise type • Site Diaries / Weather Data • Inspections by Project Manager Seamus O' Brien <p>Findings:</p> <p>It cannot be unequivocally stated whether the traffic management operations / linemarking were responsible for the noise exceedences, however these may have been a contributing factor. Future works will need to be planned and implemented with overriding concern for the surrounding community.</p> <p>Corrective Action Required:</p> <p>Future overnight works will need to be carefully planned and managed to avoid the risk of disturbance to the surrounding community. Pre-task briefings need to ensure that all personnel are aware of the plant permitted to be operated.</p> <p>SignatureRoland Tarrant..... Date23-12-11.....</p>			
<p>NER Closed</p> <p>Works have been inspected and completed as described above.</p> <p>SignatureSeamus O'Brien.....Date23-12-11...</p> <p style="text-align: center;">Project Manager / Assist Project Manager</p>			



Project Title:

**FORTH REPLACEMENT
CROSSING**

M9 Junction 1A

Project Number:

208

Recorded Noise Types and Noise Data

Total construction noise level for the period was within threshold limits.

The exceedence is explained below.

Noise Type:

An analysis of the noise recordings taken during the exceedence periods indicate that the noise could have been caused by machinery.

Site Diaries / Weather Data:

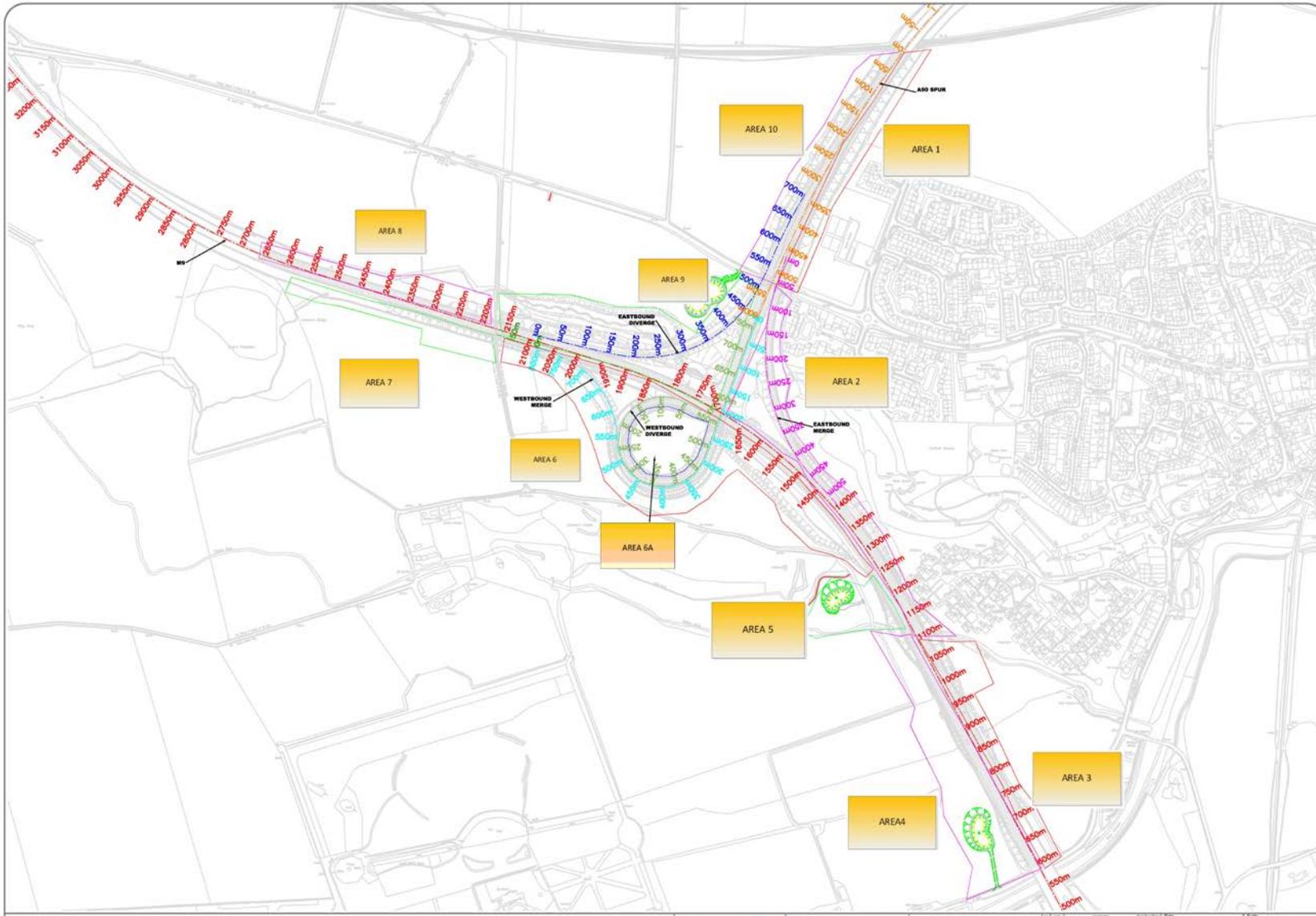
Weather conditions were calm with no significant breeze or precipitation.

Inspections by Senior Engineer:

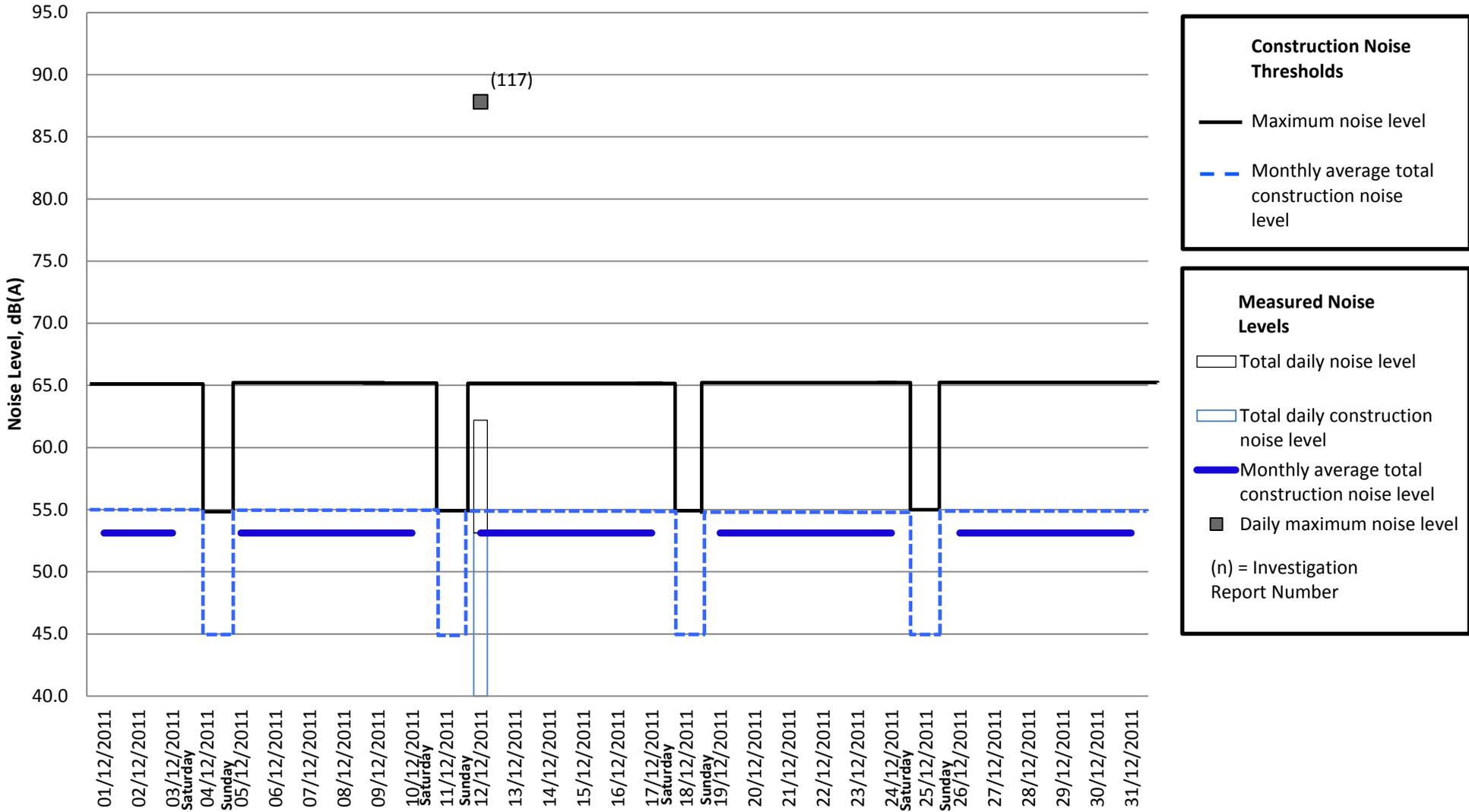
The Project Manager Seamus O'Brien was on emergency duty on the night of 12th December and on arrival to the scene there was no apparent source of the disturbance obvious. On talking to the subcontractors crew, it transpired that some additional unauthorised machinery may have been started up possibly contributing to a disturbance.

Summary:

It is possible that exceedences are related to M9J1a construction activities and the unauthorised start up of machinery by a sub-contractor.

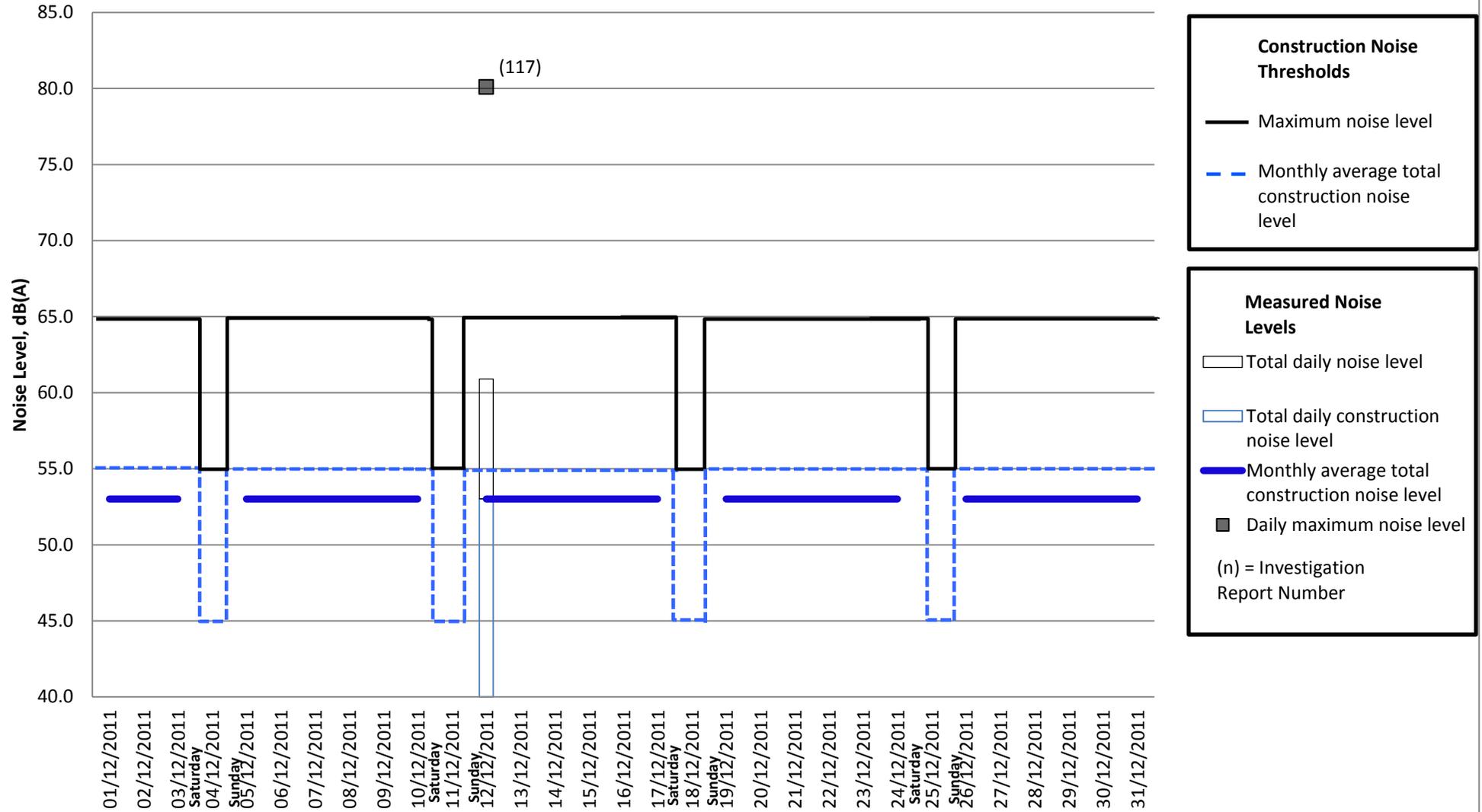


Measured night-time noise levels, 15-17 Buie Rigg (CNV07) 1st December 2011 to 31st December 2011



Sunday data have not been included as no construction works have been conducted during these hours.

Measured night-time noise levels, 8 Kirklands Park Grove (CNV16) 1st December 2011 to 31st December 2011



Sunday data have not been included as no construction works have been conducted during these hours.