

EPA Application Form

7.5 - Noise Emissions - Attachment

Organisation Name: *

Amazon Data Services Ireland Limited

Application I.D.: *

LA007495

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Authorisation Application Form

Amendments to this Application Form Attachment

Version No.	Date	Amendment since previous version	Reason
V.1.0	July 2017	N/A	Online application form attachment
As above	Mar 2018	Identification of required fields	Assist correct completion of attachment

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Noise Emissions (see **Note i** at the end of this attachment)

Note: An assessment of the impacts of noise, where applicable, should be uploaded in Tab 7 – ‘Emissions Overview’ of the application form.

Provide detail of measures to reduce noise emissions (list techniques)

(See **Note ii** at the end of this attachment)

Selection of plant with due consideration to off-site noise impacts along with the provision of attenuation (e.g. to roof fans etc. where required) have been considered. The site also has been considered as a whole with the relevant noise criteria being applied to the entire site rather than individual buildings that were subject to individual planning applications.

The significant noise sources associated with site operations are reviewed in Table A, B and C

Source	No. of	L _{WA} - Octave Band Centre Frequency								dB (A)
		63	125	250	500	1k	2k	4k	8k	
Roof Fan ^{Note A}	96	57	72	81	80	75	69	65	60	84.5
Data Hall CRAH (Roof)	84	55.5	64.6	71.1	75.5	75.7	71.9	65.7	59.6	80.3
Electrical Room Extract Fan ^{Note B}	10	61.5	67.7	71.8	73.8	69.3	74.5	75.3	73.2	81.4
Generator Exhaust	18	67.2	77.1	80.8	86.4	83.6	79.6	73.0	58.0	89.8
Generator Intake	18	79.4	91.6	94.2	95.0	90.0	84.9	79.9	66.0	99.4
Generator Stack	18	70.0	79.4	87.2	92.2	90.2	87.3	82.3	70.2	96.0
Pumps ^{Note C}	12	38.0	48.0	55.0	65.0	64.0	65.0	61.0	52.0	70.0

Table A L_{WA} levels Utilised in Noise Model – Building A

Note A Includes directivity effect of unit exhausting in the vertical plane.

Note B Includes provision of in line attenuation offering the following minimum sound reduction:

Element	Sound Insertion Loss dB – Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Louvre	6.0	9.0	16.0	19.0	24.0	17.0	13.0	10.0

Note C Acoustic enclosures will be provided for external pumps in order that the stated noise levels in Table A are achieved.

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Source	L _{WA} - Octave Band Centre Frequency								dB (A)
	63	125	250	500	1k	2k	4k	8k	
Roof Fan ^{Note D}	57	72	81	80	75	69	65	60	84.5
Data Hall CRAH (Roof)	55.5	64.6	71.1	75.5	75.7	71.9	65.7	59.6	80.3
Electrical Room Extract Fan ^{Note E}	61.5	67.7	71.8	73.8	69.3	74.5	75.3	73.2	81.4
AHU Louvres ^{Note F}	54	63	74	73	66	67	71	66	79
Generator Exhaust ^{Note G}	54	63	74	73	66	67	71	66	79
Generator Intake ^{Note G}	88	90	82	83	83	80	78	76	94
Generator Rear ^{Note G}	88	90	82	83	83	80	78	76	94
Generator Stack ^{Note H}	84	77	77	73	69	74	71	71	86
Generator Sides & Roof ^{Note G}	82	93	92	94	94	93	88	75	101
Pumps ^{Note I}	38	48	55	65	64	65	61	52	70
Transformers (x 4)	64	66	96	88	76	69	71	71	97

Table B L_{WA} levels Utilised in Noise Model – Building B, C and D

Note D Includes directivity effect of unit exhausting in the vertical plane.

Note E Includes provision of in line attenuation offering the following minimum sound reduction:

Element	Sound Insertion Loss dB – Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Louvre	6.0	9.0	16.0	19.0	24.0	17.0	13.0	10.0

Note F It is assumed the relevant L_w associated with the AHU intake fan(s) is 84dB(A) as detailed in supplied data sheets. Provision of in line attenuation offering the following minimum sound reduction has been assumed:

Element	Sound Insertion Loss dB – Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Splitter	6	8	13	15	18	12	9	8
Filter	0	2	2	2	4	7	7	12

Note G Assuming generator housing dimensions of 17m (L) x 4m (W) x 4m (H). Data based on CAT data supplied in relation to previous sites.

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Note H Additional attenuation due to 25m stack and additional bends assumed.

Note I Acoustic enclosures will be provided for external pumps in order that the stated noise levels in Table B are achieved.

Source	L _{WA} - Octave Band Centre Frequency								dB (A)
	63	125	250	500	1k	2k	4k	8k	
Roof Fan	61	68	75	77	75	74	77	73	84
Roof Condensers	57	77	67	74	77	74	68	65	82
AHU Louvres	54	69	73	70	63	62	61	61	79
Generator Intake ^{Note J}	110	105	100	85	70	65	70	94	97
Generator Rear ^{Note J}	108	105	103	92	84	73	62	66	97
Generator Stack ^{Note K}	82	87	83	79	78	78	77	70	85
Generator Stack ^{Note K}	100	93	93	89	85	90	87	87	102
Generator Sides ^{Note J}	110	107	106	95	86	75	64	68	99
Generator Roof ^{Note J}	110	108	103	98	97	97	96	94	104
Pumps ^{Note L}	38	48	55	65	64	65	61	52	70
Transformers (x 4) ^{Note M}	49	51	81	73	61	54	56	56	82

Table C L_{WA} levels Utilised in Noise Model – Building E & F

Note J Assuming generator housing dimensions of 17m (L) x 4m (W) x 4m (H). Data based on CAT data supplied in relation to previous sites.

Note K Additional attenuation due to 20m stack and additional bends assumed.

Note L Acoustic enclosures will be provided for external pumps in order that the stated noise levels in Table C are achieved.

Note M Based on extract from *ABB Determination of Sound Level Report S/N 1LIT755437-01*

In the emergency power outage scenario, the main noise sources will be diesel back-up emergency generators.

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Following the *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (2012 as amended) complete the table below, inputting summary details of noise monitoring points ^(see Note iii at the end of this attachment) and proposed noise limit criteria.

Monitoring point code ¹	Easting ²	Northing ³	Monitoring point type ⁴	Proposed Noise Limit Criteria				Proposed monitoring frequency
				Max. noise level daytime dB L _{Ar,T} (30 mins)	Max. noise level evening dB L _{Ar,T} (30 mins)	Max. noise level night dB L _{eq,T} (15-30 mins)	How was the noise limit derived? ⁵	
A	717,659	741,190	Noise Sensitive Location	55	50	45	BAT / NG4 See Section 4.3 of supporting NG4 report Ref: DK/20/11543NR01	Annual
B	718,330	741,593		55	50	45		
C	718,587	741,574		55	50	45		
D	718,456	741,402	Boundary	--	--	--		
E	717,764	740,432	Noise Sensitive Location	55	50	45		
F	717,543	740,589		55	50	45		

Note: Map(s)/drawing(s) uploaded under ‘Site Plans’ in Tab 3 of the application form should identify the emission and monitoring points.

- 1 The following convention should be observed when labelling noise monitoring points:
N1, N2,.....The monitoring locations should be identified on an accompanying site plan drawing(s) uploaded in Tab 3 – ‘Site’ of the application form.
- 2 Six Digit GPS Irish National Grid Reference of Monitoring Point
- 3 Six Digit GPS Irish National Grid Reference of Monitoring Point
- 4 Monitoring point type options: ‘Boundary’, ‘Noise Sensitive Location’ or ‘Permanent Noise Monitoring’
- 5 Derived noise limit options: ‘BAT’, ‘EQS’, or ‘Derogation’

* indicates required field

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Was an assessment for tonal and impulsive noise carried out? ⁶ (Yes/No)	Yes
If 'Yes' was tonal or impulsive noise identified to be present? (Yes/No)	No

For emissions outside the EPA Noise Guidance Note limit, see the Agency's *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (2012) (available on www.epa.ie), a full evaluation of the existing abatement/treatment system must be provided. A planned programme of improvement towards meeting upgraded standards is required to be uploaded with this document. This programme should highlight specific goals and a time scale, together with options for modification, upgrading or replacement, as required, to bring the emissions within the limits as set out in the Guidance Note.

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⁶ Refer to section 5 of the Agency's *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (2012 as amended).

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Note i This part of the application form collects data on noise emissions namely measures used to reduce noise and noise levels at a reference distance under normal operation. As noise emissions can arise from different sources on a site, the EPA usually considers the total emission from the site. Please note that emission limit values and monitoring requirements in any proposed licence shall be based on the information supplied hereunder.

Note ii Measures are usually required to reduce, minimise or prevent emissions from occurring. They may involve the application of a single technique or a combination of techniques including housing, insulation and appropriate location of equipment. List all techniques proposed/employed. Technique(s) employed must comply with BAT. Highlight additional measures required for the purposes of protecting the environment. The measures or techniques to be taken must be capable of complying with the proposed/known emission level(s).

The measures required shall be informed by the following:

1. BAT techniques
2. Stricter measures/techniques than BAT
3. BAT determined by competent authority in consultation with the applicant
4. Other measures

Note iii An individual record (i.e. row) is required for each monitoring point. A National Grid Reference (12 digit, 6E, 6N) must be given for each monitoring point. Noise emissions differ from other emissions in that they are generally limited at a reference distance from the source(s). This reference distance should be, where possible, the boundary of the installation but in certain circumstances it is a noise sensitive location outside the boundary of the installation. Noise levels along a boundary will vary due to the location and positioning of noise sources and the 'worst case' should always be selected. Sufficient points should be identified to fully describe the noise levels from the installation. For waste activities, traffic noise emissions should be taken into account especially if it. The Agency's Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (2012) and Guidance Note on Noise assessment of Wind Turbine Operations at EPA licensed Sites (NG3)(as appropriate) should be consulted when setting proposed sound limits.