

**Indaver Ireland Limited**

## IE Licence Review Application

### Noise Impact Assessment

Reference: LA010332

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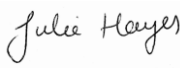


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Job number 289377-00

**Ove Arup & Partners Ireland Limited**  
50 Ringsend Road  
Dublin 4  
D04 T6X0  
Ireland  
[arup.com](http://arup.com)

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		<b>Name</b>	Julie Hayes	Naomh O'Regan	Dan Garvey
		<b>Signature</b>			
		<b>Filename</b>			
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			<b>Prepared by</b>	<b>Checked by</b>	<b>Approved by</b>
		<b>Name</b>			
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# 1. Introduction

Indaver Ireland Limited (Indaver) operate a waste to energy (WtE) facility in Carranstown, Duleek, Co. Meath. As per the sites Industrial Emissions (IE) Licence (Reg. No. W0167-03) the site is permitted to undertake the following activities:

*Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants*

- a) *for non-hazardous waste with a capacity exceeding 3 tonnes per hour, and*
- b) *for hazardous waste with a capacity exceeding 10 tonnes per day.*

This impact assessment report refers to the Environmental Impact Assessment Report (EIAR), which was prepared for the proposed development (Arup, 2021), the environmental noise surveys, which were undertaken in 2018 and 2019 and has been prepared in accordance with the EPA's *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (2016)*.

# 2. Proposed Development

The proposed development includes the following:

1. Increase in the amount of hazardous waste accepted at the facility for treatment in the waste to energy plant from the current permitted 10,000 tonnes per annum (tpa) up to a maximum of 25,000 tpa;
2. Increase the annual total waste accepted at the site for treatment in the waste to energy facility from the currently permitted 235,000 tpa to 250,000 tpa;
3. Development of an aqueous waste tank farm and unloading area;
4. Development of a 10MW<sub>e</sub> hydrogen generation unit;
5. Development of a bottom ash storage building;
6. Acceptance of circa 30,000 tpa of third-party boiler ash and flue gas cleaning residues and other similar residues for treatment in the existing ash pre-treatment facility on site;
7. Development of a warehouse, workshop and emergency response team /office building, concrete yard and other miscellaneous site upgrades.

Figure 1 and Figure 2 illustrate the existing layout at Indaver and the location of the proposed development in the context of the existing site.

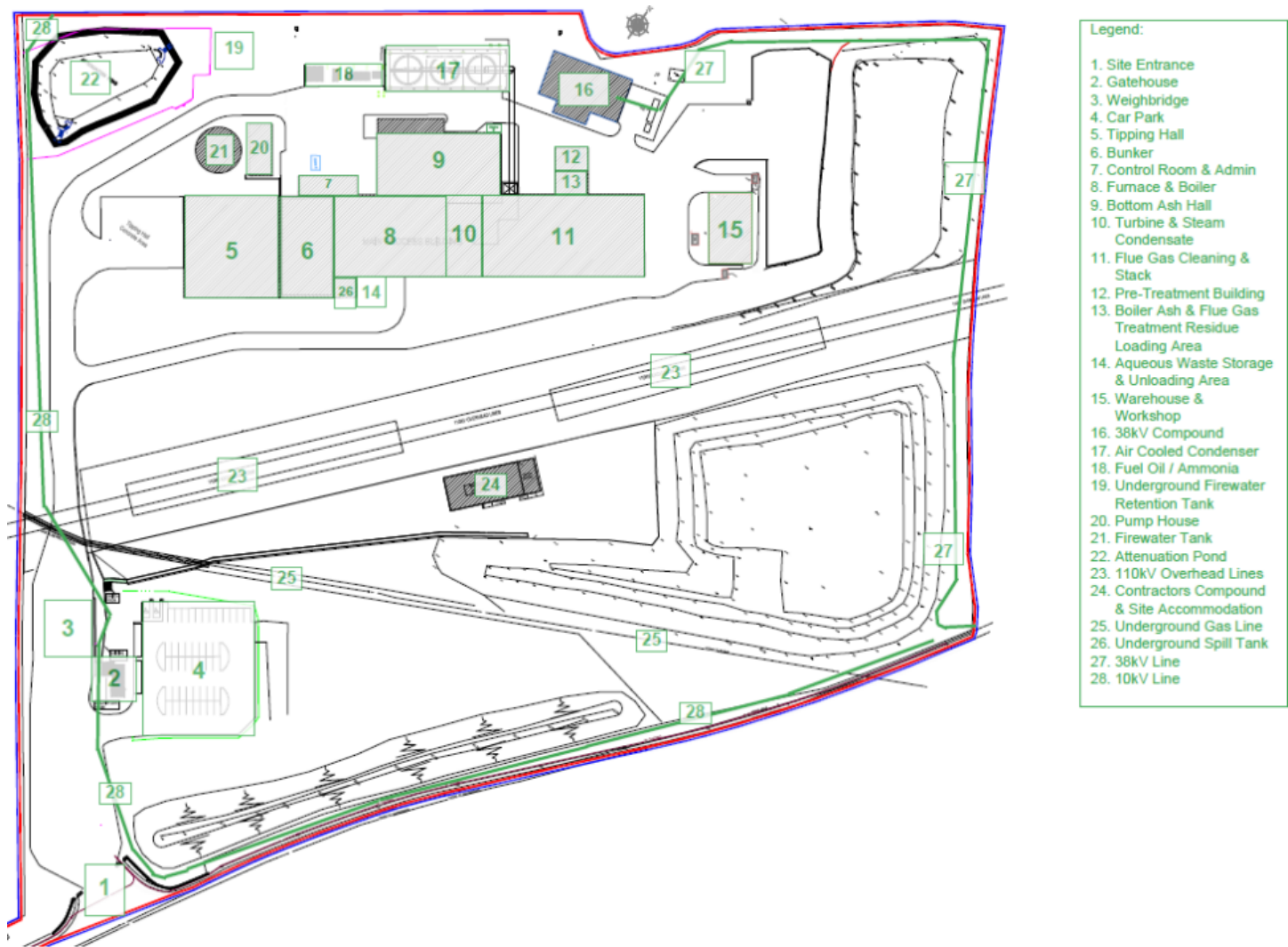
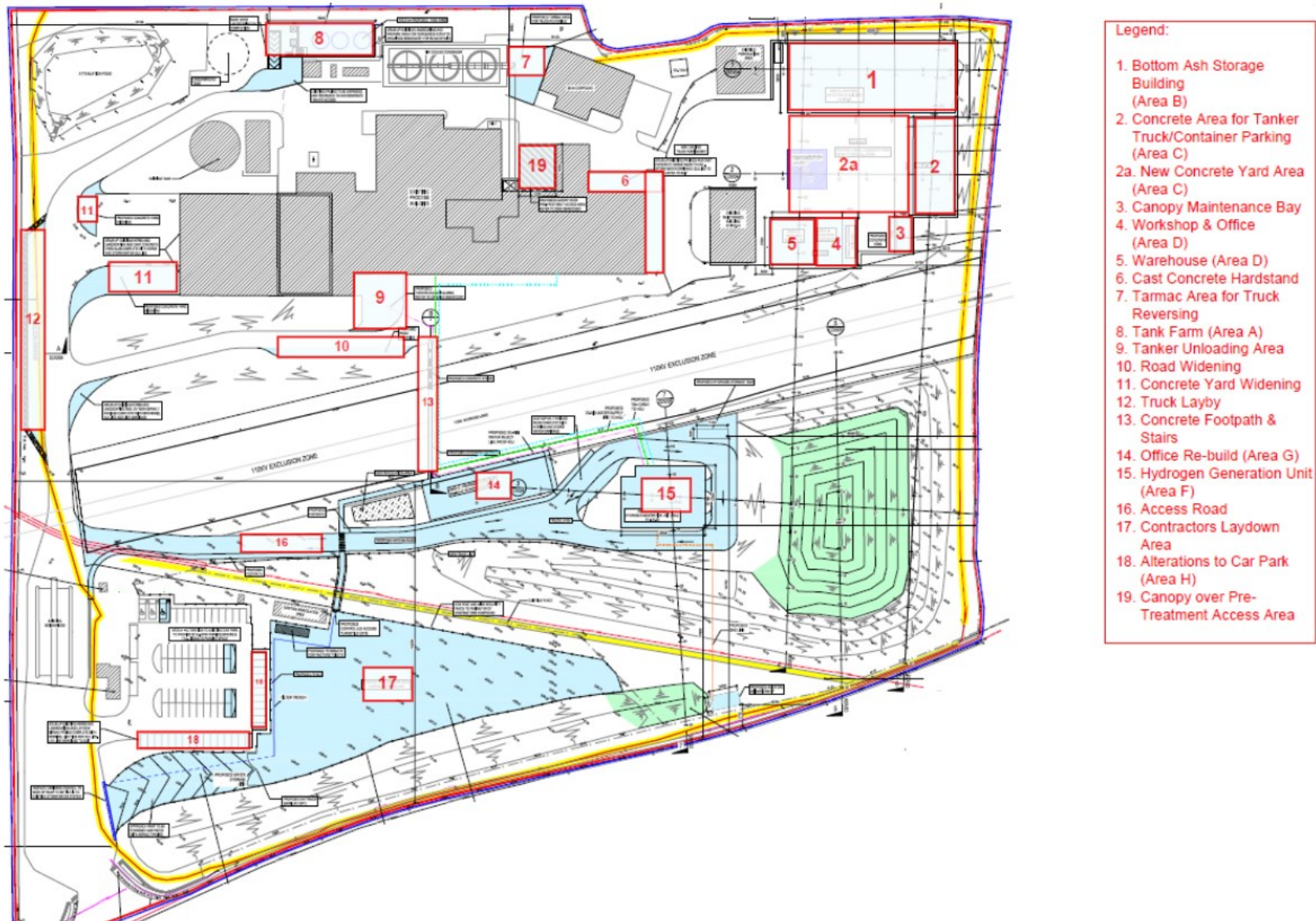


Figure 1 Existing Indaver Site Layout | Not to scale.



**Figure 2 Location of proposed development | Not to scale**

## 3. Methodology

### 3.1 Baseline Survey

A review of the 2018 and 2019 noise monitoring surveys was used to establish current noise levels associated with the current facility in operation.

Noise was measured using a methodology that was in general accordance with ISO 1996-1:2016.

Details on the survey locations, measurement parameters, survey periods and meteorological conditions during the survey periods are outlined in the following sections.

#### 3.1.1 Survey Locations

In accordance with Condition 6.2 and Schedule B.4 of the current IE Licence (W0167-03) Indaver carry out annual noise monitoring surveys at four monitoring positions (AN1-1 to AN1-4) at the boundary of the facility. The noise monitoring surveys for 2018 and 2019 was undertaken in August.

Supplementary monitoring was conducted (October 2019) via an unattended monitoring device along the south-eastern boundary of the Indaver facility, at the approximate location of AN1-1. This was to gain additional noise monitoring data over day, evening and night -time periods.

The survey location co-ordinates and descriptions are presented in Table 1 and shown in Figure 3 and Figure 4.

**Table 1 Description of annual monitoring locations (AN1-1 to AN1-4)**

Survey Location	Location Type	Location	Coordinates (ITM)	
			Easting	Northing
AN1-1	Boundary (Supplementary monitoring)	South east site boundary bottom of berm. Approximately 18m from nearest property to south east boundary off the R152 Road	306482	270931
AN1-2	Boundary	Mid southern site boundary. Approximately 80m from nearest properties to southern boundary off the R152 Road	306371	270728
AN1-3	Boundary	Monitoring position along south western site boundary. Approximately 45m from nearest property to south west boundary off the R152 Road	306241	270538
AN1-4	Boundary	Monitoring position along north western site boundary. Monitoring location is not in proximity to any noise sensitive locations.	306079	270892

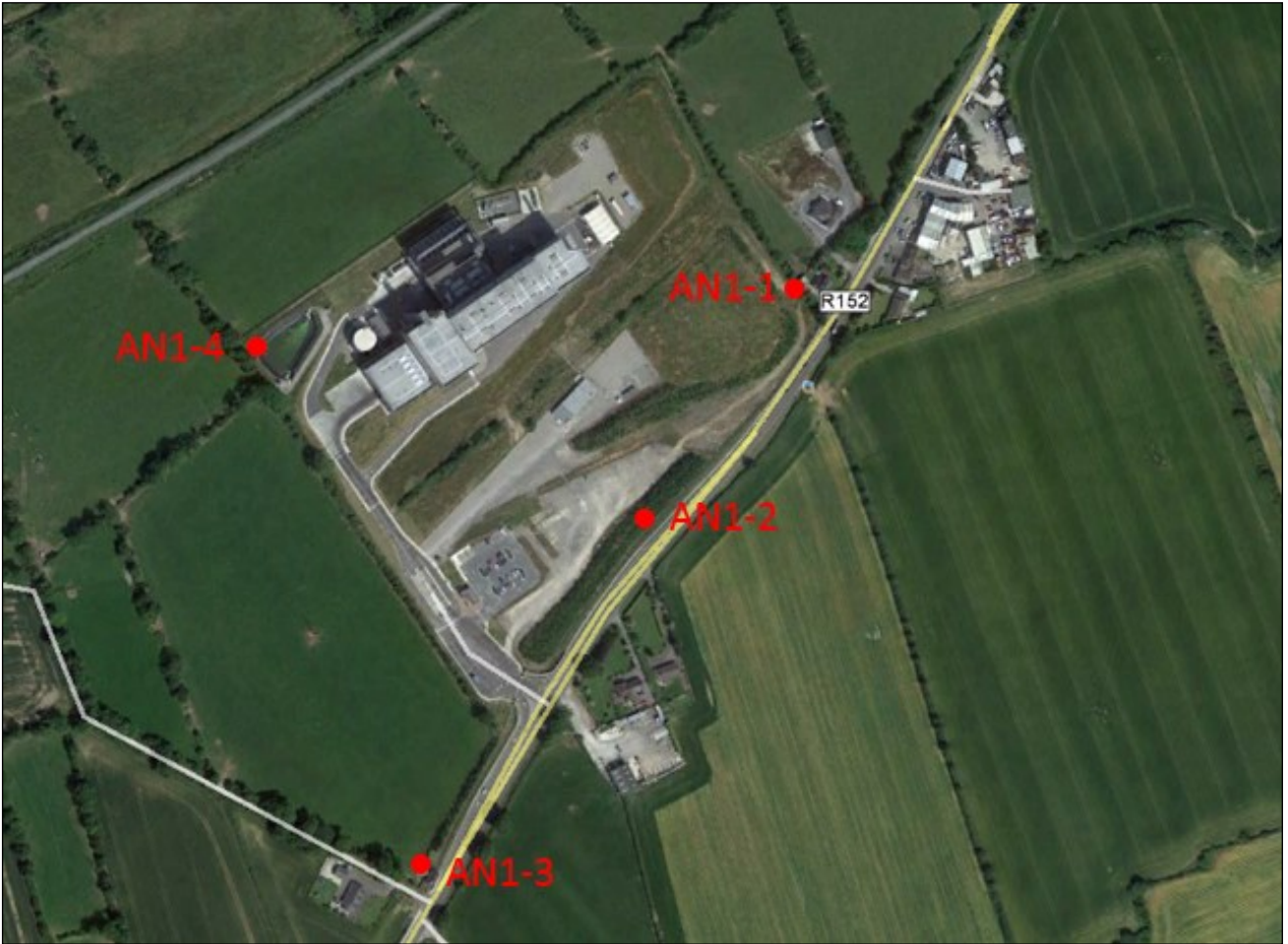


Figure 3 Annual Monitoring Locations | not to scale | Background mapping: Bing Maps



Figure 4 Noise Sensitive Locations (NSLs) | not to scale | Background mapping: Bing Maps



### 3.1.2 Measurement Parameters

The following parameters were recorded and reported:

- $L_{Aeq}$  – this is the continuous steady sound level during the sample period and effectively represents an average value;
- $L_{A10}$  – this is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise;
- $L_{A90}$  – this is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise; and
- $L_{Amax}$  – this is the maximum sound level of the sample period.

The “A” suffix denotes the fact that the sound levels are “A-weighted” in order to account for the non-linear nature of human hearing.

### 3.2 Assessment Methodology

The assessment methodology is based on EPA guidance and external noise consultants survey reports.

- Compliance noise monitoring data undertaken as part of the facilities annual noise monitoring has been reviewed to summarise the existing noise environment at the nearest noise sensitive locations;
- Additional noise monitoring has been undertaken adjacent to the closest noise sensitive location to supplement the annual noise monitoring results;
- A review of the facilities waste licence operational noise limits has been undertaken to determine the appropriate limit values applicable to the existing facility and any amendments proposed;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the proposed development at the most sensitive locations surrounding the development site; and
- A schedule of mitigation measures has been proposed to reduce, where required.

The ‘Guidelines for Environmental Noise Impact Assessment’ produced by the Institute of Environmental Management and Assessment (IEMA) (2014) have been referenced in order to categorise the potential effect of changes in the ambient noise levels during the operational phase of the proposed development.

Table 2 is based on the scale within the IEMA guidelines and also includes the corresponding significance of impact presented in the ‘Guidelines on the Information to be Contained in Environmental Impact Assessment Reports’ (EPA, 2022)

**Table 2 Significance criteria for changes in noise levels**

Noise Level Change dB(A)	Subjective Response	Long Term Impact Classification (IEMA, 2014)	EPA Impact (2022)
$\geq 0$	No change	Negligible	Imperceptible
$\geq 0$ and $< 3$	Barely perceptible		Not Significant
$\geq 3$ and $< 5$	Noticeable	Minor	Slight - Moderate
$\geq 5$ and $< 10$	Up to a doubling of loudness	Moderate	Moderate - Significant
$\geq 10$	More than a doubling of loudness	Major	Significant - Profound

### 3.3 Significance Criteria

Condition 6.2 of IE. W0167-03 states that licensee shall perform an annual noise survey of site operations and that noise levels shall not exceed the limits as set out in Schedule B.4 (refer to Table 3), 55 dB for daytime and 50 dB for evening and an  $L_{Aeq,T}$  of 45 dB for night time hours. Daytime hours are between 7am and 7pm, evening hours are between 7pm and 11pm and night time hours between 11pm and 7am.

Condition 5.4 of the IE licence states that there shall be no clearly audible tonal or impulsive noise from activities on site.

**Table 3 Operational Noise Limits for Indaver facility**

Daytime dB(A) LAeq (30 minutes)	Evening-time dB(A) LAeq (30 minutes)	Night-time dB(A) LAeq (30 minutes)
55	50	45

## 4. Baseline Environment

Lands surrounding the facility are a mix of agricultural farmland, industrial and residential. There are nine residential locations within 200m of the site boundary. The majority of these residences are located to the south west and south east of the site boundary along the R152. Lands to the west of the site are predominantly agricultural farmland with isolated private residences beyond. Lands to the north of the site are a mixture of agricultural farmland and industrial (Platin Cement works and quarry). The closest noise sensitive property being approximately 20m to the south east of the site boundary.

Activities at the Indaver facility are largely contained within the WtE building and ancillary structures with the exception of a small number of external plant items which are positioned along the northern site boundary, away from noise sensitive properties. The facility operates on a 24/7 basis with waste acceptance and dispatch permitted between 07:00 and 18:30 hrs Monday to Friday and between 08:00 and 14:00hrs on Saturday.

The noise contribution from the existing site is relatively low. The key activities associated with the existing operations involves site traffic, external plant items to the north of the main building and the main stack.

Baseline noise levels from the annual Noise Monitoring Surveys undertaken in 2019 and 2018 are provided in Table 4 and Table 5 respectively. To gain supplementary noise monitoring data over day, evening and night -time periods additional unattended noise monitoring was undertaken in 2019 along the south-eastern boundary of the Indaver facility.

**Table 4 Annual Noise Monitoring Results – 2019**

Monitoring Point	2018 Noise Monitoring Results			
	Period	LAeq,30mins	LA10,30mins	LA90,30mins
AN1-1	Daytime	59	62 – 63	48 – 49
	Evening	57	62	43
	Night-time	55	60 – 61	39 – 41
AN1-2	Daytime	63	66	53 – 54
	Evening	55	58	48
	Night-time	51 – 52	54	44 – 45
AN1-3	Daytime	57 – 58	59 – 60	52 – 53
	Evening	54	57	45
	Night-time	52 – 53	56 – 57	43 – 44
AN1-4	Daytime	50 – 52	51 - 53	47 – 48
	Evening	49	50	47

Monitoring Point	2018 Noise Monitoring Results			
	Period	LAeq,30mins	LA10,30mins	LA90,30mins
	Night-time	48	50	45 – 47

**Table 5 Annual Noise Monitoring Results - 2018**

Monitoring Point	2018 Noise Monitoring Results			
	Period	LAeq,30mins	LA10,30mins	LA90,30mins
AN1-1	Daytime	55 - 56	58 - 59	46
	Evening	51	56	41
	Night-time	47 - 50	49 - 50	39 -40
AN1-2	Daytime	67 - 68	71 - 72	53 – 55
	Evening	61	65	45
	Night-time	56 - 58	38 - 54	33 – 34
AN1-3	Daytime	61 - 62	65	53 – 54
	Evening	55	59	37
	Night-time	51 - 52	48 - 54	32
AN1-4	Daytime	49 - 52	51 - 52	46 – 47
	Evening	45	46	43
	Night-time	45 - 46	46 - 51	43

Results from the annual noise monitoring surveys and the supplementary noise survey indicate that road traffic dominates the prevailing noise environment at noise sensitive locations surrounding the facility. Activities from the Indaver facility are audible at low level during quieter night-time and evening periods during lulls in surrounding noise sources, predominately road traffic. The range of noise levels measured in terms of the LA90 parameter representing the steady background noise levels confirms the facility is operating within its licence limits at present for all periods at all survey locations.

## 5. Noise Impact Assessment

Once operational, the potential noise sources associated with the proposed development will be from:

- Mechanical and electrical equipment;
- Vehicle movements / activities on site, and
- Additional vehicular traffic to and from the site.

In order to assess the potential impact of the proposed development, noise modelling was undertaken which included a 3D noise model of the existing facility and the proposed development. Results from the noise modelling confirmed that with the addition of the proposed development the Indaver site will continue to operate within the noise emission limits as set out in IE W0167-03, during day , evening and night-time periods.

**Table 6 Noise Levels – Daytime**

Assessment Location	Nearest Baseline location	Baseline $L_{A90}$ Daytime	Predicted Noise Level dB (Proposed Development)	Cumulative Noise Level, dB(A)	Within daytime limit value? (55dB $L_{Aeq}$ )
NSL1	AN1-4	46	29	46	Yes
NSL2	AN1-1	50	24	50	Yes
NSL3	AN1-2	53	30	53	Yes
NSL4	AN1-2	53	31	53	Yes
NSL5	AN1-1	50	26	50	Yes

**Table 7 Noise Levels – Evening**

Assessment Loc.	Nearest Baseline location	Baseline $LA_{90}$ Evening -	New sources Predicted. Level dB (Proposed Development)	Cumulative Noise Level dB(A)	Within evening limit value? (50dB $L_{Aeq}$ )
NSL1	AN1-4	43	27	43	Yes
NSL2	AN1-1	46	22	46	Yes
NSL3	AN1-2	45	27	45	Yes
NSL4	AN1-2	45	24	45	Yes
NSL5	AN1-1	46	25	46	Yes

**Table 8 Noise Levels – Night-time**

Assessment Loc.	Nearest Baseline location	Baseline Night-time - $L_{A90}$	New sources Predicted. Level dB (Proposed Development)	Cumulative Noise Level dB(A)	Within night-time limit value? (45dB $L_{Aeq}$ )
NSL1	AN1-4	43	27	43	Yes
NSL2	AN1-1	45 <sup>1</sup>	22	45	Yes
NSL3	AN1-2	34	26	35	Yes
NSL4	AN1-2	34	23	34	Yes
NSL5	AN1-1	45	25	45	Yes

Noise arising from increased traffic movements was also included as part of the assessment and was based on the conclusion that the proposed development would result in an additional 35 Heavy Vehicle (HGV)

<sup>1</sup> The higher background level of 45dB  $LA_{90}$  measured over the full night-time period at the supplementary unattended noise monitoring position has been used. This is a worst-case assessment as it includes contribution from road traffic flows during early morning periods.

trips and 40 Light Vehicle (LV's) trips, which will be spread throughout the day. This equates to a daily total of 70 HGV two-way movements and 80 Light Vehicle movements to and from the site.

The change in traffic noise level was calculated between as being between 0 to 0.1dB. A change of this magnitude will not result in any notable change in noise level over existing road traffic noise levels and is considered not significant.

## 6. Mitigation Measures

The following best practice measures will be applied to existing site and proposed development to ensure noise levels are controlled to the surrounding environment and to comply with the facilities IE licenced noise emission limits:

- Roller shutter doors within the bottom ash storage building will be maintained closed at all times, except for access/egress during activities;
- Vehicles parked at the truck parking bay will be required to switch engines off when parked on site.
- All new items of external plant will be limited to a sound pressure noise level of 82dB at 1m;
- Plant will be sited as far away from noise-sensitive locations as is practicable;
- External plant items (pump, motors, fans) will be switched off when not required, particularly during night-time periods;
- The use of acoustic attenuators/ enclosures etc., will be employed to any items of external plant in order to ensure this limit value is complied with;
- Duct mounted attenuators will be installed on the atmosphere side of all air moving plant, where required; and
- Splitter attenuators will be installed providing free ventilation to internal plant areas, where required.

Annual noise monitoring surveys, carried out in accordance with the site's IE licence provisions, will include all aspects of the proposed development.

## 7. References

Arup (2020) Site Sustainability Project Environmental Impact Assessment Report, Chapter 10 Noise and Vibration

British Standard 7385-2 (1993) *Evaluation And Measurement For Vibration In Buildings*

DMRB (Nov 2019) *LA111 Noise And Vibration, Rev 0,*

Environmental Protection Agency (EPA) ‘*Guidelines On The Information To Be Contained In Environmental Impact Assessment Reports*’ (2022)

EPA (2016) *Guidance Note For Noise: Licence Applications, Surveys And Assessments In Relation To Scheduled Activities (NG4)*

IEMA (2014) *Guidelines For Environmental Noise Impact Assessment*

ISO (1996) *ISO 9613-2: 1996. Attenuation Of Sound Propagation Outdoors: General Method Of Calculation*

ISO (2016) *ISO 1996-1: 2016. Acoustics – Description, Measurement And Assessment Of Environmental Noise (Part 1 & Part 2)*

TII (2004) *Guidelines For The Treatment Of Noise And Vibration In National Road Schemes.*