

ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE EXPANSION OF A MATERIALS RECOVERY FACILITY AT CAPPOGUE AND DUNSINK, BALLYCOOLIN ROAD, DUBLIN 11.

Volume 2 – Main Body of the EIAR Chapter 12 – Noise and Vibration

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12. NOISE & VIBRATION

12.1 Introduction

This chapter contains the appraisal of potential noise and vibration impacts from the proposed development at Cappogue and Dunsink, Ballycoolin Road, Co. Dublin. A description of the proposed development is provided in Chapter 4 – Description of the Proposed Development in Volume 2 of the EIAR. This project description was used to carry out the predictive noise modelling as described in this chapter and to appraise the resultant noise impact in the local environment, referred to in this chapter as the study area.

12.1.1 Statement of Competency

This Chapter has been prepared by Maureen Marsden and John Cullen. Maureen is an Acoustic Engineer with a Master of Engineering in Acoustics and Vibration from Southampton University and over 20 years' experience in noise and vibration assessment, including noise prediction modelling and noise impact assessment. She is a member of the Institute of Acoustics and Engineers Ireland. John is an Environmental & Acoustic Engineer with five years' experience working in noise and vibration assessment. John is a member of the Institute of Acoustics and Engineers Ireland.

12.2 Proposed Development

12.2.1 Summary of the Proposed Development

The existing and proposed development is discussed in detail in Chapter 4 of Volume 2 of this EIAR. In summary, the proposed development consists of construction and operation of an expanded waste facility at a development site (3.38 hectares in size) encompassing the existing facility as well as lands directly south of the existing facility, falling across the townlands of Cappogue and Dunsink.

12.2.2 Potential Construction Noise Impacts – Direct and Indirect

The proposed construction works will be undertaken in a single phase, with the works estimated to take 12 months to complete. Noise during the construction phase will arise from the following elements:

- Advance works
- Development of temporary construction site compound
- Site clearance
- Site earthworks
- Installation of site services and surface water management systems
- Construction of site hard stand and granular formation surfaces
- Construction of site buildings and structures
- Installation of additional ancillary site infrastructure and elements



The construction activities and the existing operations will occur simultaneously, and total noise impact is appraised against noise limit criteria in BS 5228-1:2009+A1:2014.

12.2.3 Potential Operational Noise Impacts – Direct and Indirect

Noise during the operational phase will arise from waste processing and transfer activities. Traffic movements (notably the HGVs) on the site access road and moving around the site have the potential to generate noise.

The proposed activities will also fall within the remit of the Industrial Emissions Directive (2010/75/EU), as implemented by the European Union (Industrial Emissions) Regulations (S.I. 138 of 2013), which amend the First Schedule of the 1992 EPA Act. It is proposed that the facility will operate in accordance with the criteria set out in the requirements of the facility EPA licence when operational.

12.2.4 Potential Vibration Impacts – Direct and Indirect

The potential for vibration at neighbouring sensitive locations is typically caused by intensive ground excavation works and HGV movements on uneven road surfaces. The potential for vibration impacts on sensitive locations has been ‘scoped out’ of this EIAR for the following reasons:

- The dwelling structures at Coolbrook Cottages are ca. 40 m away from the development site boundary. Vibration will be imperceptible at these receptors, given the distance from the dwelling structures and the nearest proposed working areas on-site.
- A number of residences to the south west are <10 m from the development site boundary. No intensive ground works will be undertaken within the vicinity of this area during construction, however. Only the stripping of vegetation and the yard surfacing will be carried out in south western sections of the site.
- Once operational, all areas of the site will be covered with even surfacing preventing the potential for truck movements causing vibration. There will be minimal truck movements at locations close to sensitive off-site receptors.

12.3 Assessment Methodology

The methodology adopted for this noise assessment is as follows:

- Review of relevant guidance (as listed below), review of the Waste Facility Permit for the Applicant’s existing waste facility at the development site, and specification of suitable construction and operational noise criteria;
- Review of historical noise monitoring data at the proposed development site;
- Characterisation of the construction and operational phases of the proposed development;
- Prediction of the noise impacts associated with the construction and operation of the existing and proposed development, and;
- Evaluation of noise impacts.



12.3.1 Relevant Guidance

A list of relevant guidance documents is provided below.

- International Standard Organisation, ISO 1996-1:2016, Acoustics – Description, measurement and assessment of environmental noise -- Part 1: Basic quantities and assessment procedures
- International Standard Organisation, ISO 1996-2:2017, Acoustics – Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels
- Environmental Protection Agency, Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to. Scheduled Activities (NG4) (2016)
- Environmental Protection Agency, Guidelines on the information to be contained in the Environmental Impact Assessment Reports, 2022.
- International Standard Organisation, ISO 9613-2:1996, Acoustics – Attenuation of Sound During Propagation Outdoors
- British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound
- *BS 7385-2:1993, Evaluation and measurement for vibration in buildings: Guide to damage levels from ground borne vibration*
- *BS 6472-1:2008, Guide to evaluation of human exposure to vibration in buildings: Vibration sources other than blasting*
- *BS 5228-1:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*
- *BS 5228-2:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*
- Calculation of Road Traffic Noise (CRTN), Department of Transport Welsh Office, HMSO 1988
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004, Transport Infrastructure Ireland
- Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, 2014, Transport Infrastructure Ireland
- Dublin Agglomeration Environmental Noise Action Plan December 2018 – July 2023 Volume 3 Fingal County Council, December 2018

12.3.2 Study Area

The proposed development is located in the townlands of Cappogue and Dunsink, south of the Ballycoolin Road, Co. Dublin and is on a 3.38 ha site. The development site is situated approximately 2 km north-west of Finglas village and 2 km east of Blanchardstown village. The site is located immediately north the M50, approximately midway between Junctions 5 and 6. Dunsink Landfill and agricultural lands are situated further south of the site on the opposite side of the M50. A number of residential dwellings are located to the west and south-west of the site, with agricultural lands situated further west of the site. The Ballycoolin Road is situated ca. 180 metres north of the site. A number of residential dwellings are situated along this road ca. 200 m north west of the site.



Rosemount Business Park is situated ca. 240 metres north of the site. Premier Business Park is situated ca. 270 metres to the north east of the site. Various industrial land uses are located to the north east of the site along the Cappagh Road, including a Materials Recovery Facility, quarry, and a manufacturing facility.

The positions of the noise monitoring locations under the Waste Facility Permit (WFP-FG-17-0001-04) for the existing waste facility issued by Fingal County Council are provided in Table 12-1.

Table 12-1: Existing Noise Monitoring Locations

Monitoring Location	Easting	Northing	Description
N1	710165	739647	Residential properties west of site (Coolbrook Cottages)
N2	710177	739878	Residential properties north-west of site (a series of residence along the Ballycoolin Road)

The closest inhabited residential dwellings are located to the west of the site boundary. For the purpose of the impact assessment, 21 no. receptors were modelled, representing noise sensitive locations within 500m of the site boundary. Noise monitoring locations and noise sensitive locations are identified and shown on a map in Appendix 12-1.

12.4 Evaluation Criteria

12.4.1 Construction Noise Criteria

There is no statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. In the absence of specific noise limits, appropriate emission criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise.

BS 5228-1:2009+A1:2014 contains several methods for the assessment of the significance of noise effects. The ABC Method from BS 5228-1:2009+A1:2014 is used to derive appropriate noise limits for the proposed development. The threshold limits as defined in Table 12-2 based on existing ambient, which if exceeded, indicate a significant effect.



Table 12-2: Example Threshold of Significant Effect at Dwellings during Construction

Assessment category and threshold value period (L_{Aeq})	Threshold Value, in decibels (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values. B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values. C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values. D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.			

For the appropriate period (e.g. daytime) the ambient noise level is determined and rounded to the nearest 5dB. Based on the proposed hours of construction and daytime noise levels monitored at the locations detailed in Section 12.5.1, the Category B threshold value of 70 dB $L_{Aeq,1hr}$ is appropriate at the closest Noise Sensitive Locations to the site during construction works.

Section 12.6.2 provides the detailed appraisal of construction activity in relation to this site. If the modelled total noise level exceeds the appropriate category value (i.e. 70 dB $L_{Aeq,1hr}$ during daytime periods) at an NSL then a potential significant effect is predicted.

12.4.2 Operational Noise Criteria

The operational noise impact appraisal of the proposed development was carried out with reference to the existing Waste Facility Permit (WFP-FG-17-0001-04) issued by Fingal County Council and EPA document “Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)”, EPA 2016.

Waste Facility Permit

The existing Waste Facility Permit (WFP-FG-17-0001-04) issued by Fingal County Council details the following regarding noise emissions from site activities:

6.1.1: *The permit holder shall carry out such monitoring of surface water/groundwater/noise/odour/dust, at such locations, frequencies, parameters and using the method/technique, as set out in Appendix E, unless otherwise agreed with Fingal County Council.*



7.2.1 The permit holder shall take adequate precautions, as agreed with Fingal County Council, to prevent noise, odours, fumes, dust, mud, grit, untidiness and other nuisances that would result in a significant impairment of, or a significant interference with amenities, or the environment beyond the facility boundary, from arising during the course of the waste activities at the facility. If unacceptable levels occur, the permit holder shall abide by Fingal County Council abatement requirements, which may include immediate cessation of operations

Appendix E – Environmental Monitoring

Condition 6.1.1: Environmental Monitoring

Monitoring Locations

Monitoring locations shall be those as set out in Table E.1

Table E.1 Monitoring Locations

Parameter	Location
Noise	N1 ; N2 (per Figure 9.1 of EIAR)

As illustrated in Environmental Monitoring Location map attached in Appendix G.

Noise locations as illustrated in Figure 9.1 of the EIAR report from Fehily Timoney and attached in Appendix G

Noise Monitoring

Table E.4: Noise Monitoring Frequency

Parameter	Monitoring Frequency	Method
<<parameter and frequency to be decided by local authority>>	Annually	Note 1

Note 1: The survey programme shall be undertaken in accordance with the methodology specified in the EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (January 2016).

Appendix F – Emission Limits

Condition 7.1.1: Emission Limits

The Emission Limit for noise will be the greater of either the levels described in Table F1, or the background noise + 1dB. The background noise level shall be established by measuring noise level in the absence of any activity from the permitted facility.



Table F.1: Noise Emissions: (Measured at the monitoring points indicated in Table E.1).

Day dB(A) L _A ,T (07:00 – 19:00 hours)	Evening dB(A) L _A ,T (19:00 – 23:00 hours)	Night dB(A) L _A eq (23:00 – 07:00 hours)
55dB ^{Note 1}	50dB ^{Note 1}	45dB ^{Note 1}

Note 1: There shall be no clearly audible tonal component or impulsive component in the noise emissions from the activities on the site at the facility boundary.

Note 2: A penalty of 5 dB for tonal and/or impulsive elements shall be applied to the day-time and evening measured L_Aeq to determine the appropriate rating level (L_A).

EPA NG4

The Environmental Protection Agency (EPA) (2016), “Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)” provides noise guidance to operators’ subject to IE licences. Therefore, operational noise from on-site activities from the proposed facility will be appraised against the EPA’s NG4 guidance.

The EPA’s NG4 requires that sites are screened to determine whether they are a ‘quiet area’ in accordance with the EPA publication *Environmental Quality Objectives – Noise in Quiet Areas* (2003) (Step 1 of NG4 Screening) or areas of low background noise (Step 2/3 of the screening). This screening is required to determine the most applicable noise limits for sites.

Step 1 of the screening for the proposed development is shown in Table 12.3. For the site to be in a ‘Quiet Area’, the criteria listed in Table 12.3 must be satisfied. In the case of this site, the proposed development site does not meet any of the criteria in Table 12.3 and it is therefore not considered to be a ‘Quiet Area’:

Table 12-3: Quiet Area Screening Step 1

Criteria	Response
Is the site >3km away from urban areas with a population >1,000 people?	No, the site is approximately 2.4 km from Finglas which has a population of greater than 1,000
Is the site >10km away from urban areas with a population >5,000 people?	No, site is approximately 7.4 km north west of Dublin City with a population of 1,173,179 million ²
Is the site >15km away from urban areas with a population >10,000 people?	No, site is approximately 7.4 km north west of Dublin City with a population of 1,173,179 million ²
Is the site >3km away from any local industry?	No, site is approximately 250 m south of the Rosemount Business Park
Is the site >10km away from any major industry centre?	No, site is less than 1 km from a quarry and heavy industrial facilities
Is the site >5km away from any national primary route?	No, site is within approximately 100 m of the M50
Is the site >7.5km away from any motorway or dual carriageway?	No, site is within approximately 100 m of the M50



Since the proposed development site is not in a 'Quiet Area', NG4 requires the site to be screened to determine if the site is in an 'area of low background noise' (NG4 Step 3). Background noise levels are examined to see if they satisfy the following criteria:

- Average Daytime Background Noise Level $\leq 40\text{dB } L_{AF90}$, and;
- Average Evening Background Noise Level $\leq 35\text{dB } L_{AF90}$, and;
- Average Night-time Background Noise Level $\leq 30\text{dB } L_{AF90}$.

For a site to be considered an 'area of low background noise', all three criteria must be satisfied. For sites classed as areas of low background noise the limits in Table 12-4 normally apply. Based on the baseline noise survey, detailed in Section 12.5.1, the site is not considered to be within an 'area of low background noise', as detailed in NG4.

Proposed Site Noise Limits

Based on the above information and given the proposed facility will operate under an IE licence issued by the EPA, the noise limits detailed in Table 12-4 are considered appropriate for the proposed development. These limits are prescribed in the EPA's NG4 Guidance Note for Noise.

Table 12-4: Proposed Noise Emission Limits

Period	Noise Limit
Daytime (07:00 to 19:00 Hrs)	55 dB(A) $L_{Ar,T}$
Evening (19:00 to 23:00 Hrs)	50 dB(A) $L_{Ar,T}$
Night-time (23:00 to 07:00 Hrs)	45 dB(A) $L_{Aeq,T}$

Note 1: There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location.

The NG4 guidance note states that during the daytime and evening periods, rigorous efforts should be made to avoid clearly audible tones and impulsive noise at all noise sensitive locations. A penalty of 5 dB for tonal and/or impulsive elements is applied to the daytime and evening measured $L_{Aeq,T}$ values to determine the appropriate rating level $L_{Ar,T}$. During the night-time, no tonal or impulsive noise from the facility should be audible at any noise sensitive location.

12.4.3 Significance of Impact

The criteria for determining the significance of impacts and the effects are set out in Chapter 1 - Introduction of Volume 2 of this EIAR.

The EPA guidelines do not quantify the impacts in decibel terms. In absence of such information, reference is made to "Guidelines for Environmental Noise Impact Assessment" (IEMA, 2014). Table 12.5 presents the degree of effect matrix from the IEMA guidelines and Table 12.6 presents the effect descriptions.



Table 12-5: Degree of Effect Matrix (IEMA, 2014)

		Sensitivity of Receptor			
		High	Medium	Low	Negligible
Magnitude / Scale of Change	Large	Very Substantial	Substantial	Moderate	None
	Medium	Substantial	Substantial	Moderate	None
	Small	Moderate	Moderate	Slight	None
	Negligible	None	None	None	None

Table 12-6: Effect Descriptions (IEMA, 2014)

Effect	Description
Very Substantial	Greater than 10 dB L_{Aeq} change in sound level perceived at a receptor of great sensitivity to noise
Substantial	Greater than 5 dB L_{Aeq} change in sound level at a noise-sensitive receptor, or a 5 to 9.9 dB L_{Aeq} change in sound level at a receptor of great sensitivity to noise
Moderate	A 3 to 4.9 dB L_{Aeq} change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5 dB L_{Aeq} change in sound level at a receptor of some sensitivity
Slight	A 3 to 4.9 dB L_{Aeq} change in sound level at a receptor of some sensitivity
None/Not Significant	Less than 2.9 dB L_{Aeq} change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals

For this assessment, it has been assumed that dwellings have a high sensitivity. Table 12.7 presents the impact scale adopted in this assessment as well as the corresponding significance of impact based on definitions presented in the “Guidelines on the Information to be contained in Environmental Impact Assessment Reports” (EPA, 2022).

Table 12-7: Effect Descriptions (IEMA, 2014 and EPA 2022)

Noise Level Change dB(A)	IEMA Guidelines	EPA’s Significance of Effects (2022)
Less than 2.9	None/Not Significant	Imperceptible
		Not Significant
3.0 - 4.9	Slight	Slight Effects
	Moderate	Moderate Effects



Noise Level Change dB(A)	IEMA Guidelines	EPA's Significance of Effects (2022)
5.0 – 9.9	Substantial	Significant Effects
Greater than 10.0	Very Substantial	Very Significant
		Profound Effects

Traffic Noise Criteria

There is no existing legislation that limits environmental noise levels from traffic to a particular value. The Dublin Agglomeration Environmental Noise Action Plan December 2018 – July 2023 Volume 3 identifies the M50 motorway as eligible for noise mapping as part of the Environmental Noise Regulations (Statutory Instrument No. 140 of 2006). The noise action plan details that areas with desirable low noise levels are defined as areas with a night-time level less than 50 dB(A) and/or a daytime level less than 55 dB(A). Areas with undesirable high noise levels are defined as areas with a night-time level greater than 55 dB(A) and a daytime level greater than 70 dB(A).

The proposed development will result in increased traffic to and from the site. The increase in traffic because of the proposed development has potential to impact on residences and it is important to assess any potential impact. Traffic noise impact is assessed having regard to the Design Manual for Roads and Bridges HD 213/11 Volume 11, Section 3, Part 7 Revision 1 – Noise and Vibration. The document presents details on the classification of magnitude of noise impacts in the short term (e.g. when a project is opened) and long term (typically 15 years after project opening). A change in road traffic noise of 1 dB in the short term is the smallest change that is considered perceptible. In the long term, a 3 dB change is considered perceptible. The significance that can be attached to changes in noise levels (perceptible to human beings) applies to traffic noise is shown in Table 12-8. However, the changes are subjective and will vary among individuals.

Table 12-8: Classification of Magnitude of Noise Impacts in the Long Term (Highways Agency, UK)

Magnitude of Impact	Noise Change, L_{A10} (18 hour)	
	Short Term	Long Term
No Change	0	0
Negligible	0.1 – 0.9	0.1 – 2.9
Minor	1 – 2.9	3 – 4.9
Moderate	3 – 4.9	5 – 9.9
Major	5+	10+



12.4.4 Scoping and Consultation

The scoping and consultation process is presented in Chapter 6 Scoping and Consultation.

No noise and vibration related stakeholder consultation response was received. However, at a pre-planning consultation meeting with An Bord Pleanála on the 11th of February 2022, the Board's representatives advised the Applicant to take account of noise impacts associated with facility operations in the EIAR for the proposed development.

12.5 Baseline Environment

The existing baseline noise environment has been established through a baseline noise survey and review of historic noise monitoring data.

12.5.1 Baseline Noise Survey

An attended noise survey was undertaken during the daytime on the 8th October 2021 and during the evening and night-time periods on the 11th – 12th October 2021, at four noise monitoring locations. Results are displayed in Tables 12-10 to 12-13. The data from these noise surveys has been used to represent the 'Do-Nothing' effect. The data from these noise surveys in conjunction with noise predictions has been used to determine the noise impact at noise sensitive locations.

All measurements were taken in accordance with ISO 1996 Standards Acoustics - Description and Measurement of Environmental Noise, Part 1 (ISO 1996-1:2016) and Part 2 (ISO 1996-2:2017) and the EPA document NG4: Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities. Attended monitoring was carried out using a Svantek Svan 977A Type 1 Sound Level Meter. The noise meters were fitted with a 1/2" microphone. The microphone was fitted with a windshield. The sound level meter was mounted on a tripod at a height of 1.5 m. The microphone was placed at least 3.5 m from reflecting surfaces to obtain 'free-field' conditions. The sound level meter was set to log a range of noise parameters every 15 minutes. The sound level meter was set to a frequency weighting of 'A' in accordance with international standard IEC 61672:2013 and various national standards relating to the measurement of sound pressure level representative of human hearing and a fast response time. All equipment was calibrated before and after the survey and the drift in calibration was within an acceptable range. Details of the noise monitoring equipment calibration certificates are provided in Appendix 12.2.

Monitoring Locations

Four noise monitoring locations were identified to the north-west, west and south-west of site to obtain a detailed representation of the ambient and background noise levels at these NSL's in the study area. Details of the noise monitoring locations are presented in Table 12-9. A map of the noise monitoring locations is provided in Appendix 12.1



Table 12-9: Noise Monitoring Location Details near proposed site

Monitoring Location	Location Description	Photograph
N1 ITM 710172 739874	North of site representing cottages north west of the existing waste facility, approximately 230m north-west of site.	
N2A ITM 710230 739552	Field just inside eastern edge of Coolbrook Cottages (location N4), under overhead line.	
N2B ITM 710306 739517	Mid way between M50 and the existing waste facility (closer access not possible due to fence). Represents residences to the south west of the development site.	
N4 ITM 710166 739647	On footpath opposite driveway to Coolbrook Cottages, Barn Lodge Grove.	



Note on Monitoring Locations

It should be noted that noise monitoring location N1 is the same location as N2 defined under the Waste Facility Permit for the existing waste facility, and noise monitoring location N4 is the same location as N1 defined in the permit. (See Table 12-1) for pre-existing noise monitoring locations defined under the permit. Noise monitoring locations N2A and N2B are new noise monitoring locations that have chosen for the purpose of carrying out this assessment. All noise monitoring locations provide an accurate representation of receiving noise sensitive locations situated at to the west, south-west and north-west that could potentially be affected by the proposed development and which are considered in the noise prediction modelling carried out under this chapter.

Monitoring Results

The results of the baseline noise survey are presented in Table 12-10 to Table 12-13.

Table 12-10: Baseline Survey Results – Monitoring Location N1

Receiver	Monitoring Location N1				
Period	Date & Start Time	Measured Noise Levels, dB			Comments
		L _{Aeq}	L _{AFmax}	L _{AF90}	
Daytime	08/10/2021 10:45	57	66	55	Noise from traffic south of measurement position, distant M50 noise, aircraft. Loader noise, reverse hazards and glass impacts from Rosemount Business Park to north. Reverse hazards occasionally audible from the site.
	08/10/2021 12:18	59	68	57	
	08/10/2021 13:39	54	66	50	
	Arithmetic Average of L _{AF90} (dB)			54	
Evening	11/10/2021 21:28	53	65	49	Mainly M50, car in cul de sac, distant M1 / Cappagh road noise (east), (wall screens M50), aircraft, firework.
Night-time	11/10/2021 23:25	48	57	45	Mainly road traffic noise, M50 screened by wall, traffic to north and distant traffic.
	12/10/2021 00:38	46	55	43	
	Arithmetic Average of L _{AF90} (dB)			46	



Table 12-11: Baseline Survey Results – Monitoring Location N2A (daytime only)

Receiver	Monitoring Location N2A				
Period	Date & Start Time	Measured Noise Levels, dB			Comments
		L _{Aeq}	L _{AFmax}	L _{AF90}	
Daytime*	08/10/2021 11:16	62	78	60	Mainly noise from the site, loaders inside and outside building, handtool, skip truck lifting skip, unloading metal from lorry, skip truck and chains, alarms, distant M50, aircraft.
	08/10/2021 12:41	67	90	63	
	08/10/2021 14:03	62	71	60	
	Arithmetic Average of L _{AF90} (dB)			61	

*Location inaccessible during evening and night time periods

Table 12-12: Baseline Survey Results – Monitoring Location N2B

Receiver	Monitoring Location N2B				
Period	Date & Start Time	Measured Noise Levels, dB			Comments
		L _{Aeq}	L _{AFmax}	L _{AF90}	
Daytime	08/10/2021 11:35	66	73	65	On site trucks and loaders, skip truck, forklift, loading activities inside shed, loader impacts, reverse hazards, metal being loaded into container.
	08/10/2021 12:58	67	76	65	
	08/10/2021 14:21	66	75	64	
	Arithmetic Average of L _{AF90} (dB)			65	
Evening	11/10/2021 22:45	59	65	55	Hum/fan noise towards south-east, motorway and aircraft audible.
Night-time	11/10/2021 23:00	57	66	53	M50 dominant, car horn, horse, occasional lorries passing on road to north.
	12/10/2021 00:13	57	64	54	
	Arithmetic Average of L _{AF90} (dB)			54	



Table 12-13: Baseline Survey Results – Monitoring Location N4

Receiver	Monitoring Location N4				
Period	Date & Start Time	Measured Noise Levels, dB			Comments
		L _{Aeq}	L _{AFmax}	L _{AF90}	
Daytime	08/10/2021 11:57	72	94	57	M50 traffic dominant. Site noise generally not audible, reversing hazards from site barely audible, aircraft, distant reversing hazards, dog barking.
	08/10/2021 13:20	63	92	54	
	08/10/2021 14:44	57	73	55	
	Arithmetic Average of L _{AF90} (dB)			55	Car and truck idling at Coolbrook Cottages industrial area during second run.
Evening	11/10/2021 22:17	50	57	48	M50 noise dominant and noise from road to north.
Night-time	11/10/2021 23:48	49	59	47	Mainly M50 road traffic noise, Low level fan noise to north, aircraft, helicopter
	12/10/2021 00:57	50	74	44	
	Arithmetic Average of L _{AF90} (dB)			46	

Meteorological Conditions

The weather conditions during the daytime noise survey on the 8th October 2021 was overcast. Temperatures ranged from 12 – 19 °C. The average wind speed ranged from 0.5 – 1.1 m/s, gusting up to 3.1m/s. The wind was from a west/north westerly direction during the daytime.

The weather conditions during the night-time noise survey on the 11th to 12th October 2021 was dry with a light breeze and partially overcast. Temperatures ranged from 8 – 12 °C. The average wind speed ranged from 0.3 to 1 m/s, gusting up to 2.3 m/s. The wind was from a northerly direction.

The meteorological conditions experienced during the noise survey are deemed to be within thresholds outlined in the EPA NG4 document.

12.5.2 Historic Noise Levels

Annual noise monitoring has been undertaken by the Applicant at their existing waste facility at the two locations identified in Table 12-1 (N1 and N2) in accordance with the current Waste Facility Permit (WFP-FG-17-0001-04) issued by Fingal County Council.

A summary of the results from the Applicant's noise monitoring reports between 2020-2022 is displayed in Table 12-14. The reports have concluded that monitoring results at both noise monitoring locations are affected significantly by road traffic movements on the surrounding road network and activities carried out at the facility are not adversely impacting on noise levels in the surrounding environment and are in compliance with the noise related conditions defined in the permit.



Table 12-14: Extract from Existing Waste Facility Environmental Noise Monitoring Reports 2020 – 2022

Year	Noise Monitoring Locations					
	N1			N2		
	Residential properties north-west of site			Residential properties west of site		
	L _{Aeq}	L _{A10}	L _{A90}	L _{Aeq}	L _{A10}	L _{A90}
2020	76.4 (81.4) Note 1	80.9	59.7	*	*	*
	75.9	80.4	60.6	*	*	*
	76	80.4	63.5	*	*	*
2021	72.8	77.1	54.9	59.2	60.6	57.6
2022	70	74.2	58	56.5	57.7	54.3

Note 1: 5dB correction applied for tonal noise

* No monitoring at N2

12.6 Summary of Potential Impacts

The potential impacts during the construction and operational phase are discussed in following sections. Noise sensitive locations within 500m of the development boundary were appraised. If the noise limits can be met at noise sensitive locations within 500m of the proposed development, compliance at more distant (i.e. greater than 500m) noise sensitive locations can be inferred.

There are 21 noise sensitive locations with 500m of the development. There are also a significant number of commercial premises. These have not been considered as part of the assessment as they do not meet 'noise sensitive locations' criteria defined under the EPA's NG4 guidelines (i.e. they are not high amenity areas). Appendix 12.1 presents the locations of the nearest noise sensitive locations and details on the co-ordinates of the noise sensitive locations. All noise sensitive locations were bungalows/cottages. A receptor height of 1.5m was modelled for the dwellings, therefore.

12.6.1 'Do Nothing' Impacts

If the proposed development was not constructed, it is likely that the current land use activities at and in the vicinity of the development site will continue for the foreseeable future. The existing noise environment, which is dominated by traffic noise, would remain largely unaltered as a result. There is potential for increased traffic noise as a result of traffic growth but the growth levels are low and the potential noise impact would be negligible.

12.6.2 Potential Impacts During Construction Phase

The predicted construction noise levels at the nearest noise sensitive locations were calculated using data sourced from *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1 Noise*.



The standard sets out sound power levels and L_{Aeq} noise levels of plant items normally encountered on construction sites, which in turn enables the prediction of noise levels at selected locations.

For this assessment it has been assumed that for each of the main activities, all plant will operate simultaneously. The noise impact from the proposed development construction activities are therefore considered cumulatively and are appraised against noise limits from BS 5228-1:2009+A1:2014¹. For each item of plant, the percentage on time has been assumed, depending on the construction activity. A flat ground surface has been assumed. A conservative ground cover of $G=0.75$ has been assumed in the construction model.

Construction work will generally be carried out during daylight hours. Construction work will be confined to the following times (unless otherwise agreed with the Local Authority)

- 07:00-19:00hrs on weekdays and 08:00-14:00hrs on Saturdays with no works on Sundays or Public Holidays.

To evaluate the noise during the construction phase of the development, it is necessary to define the various activities that will be undertaken. It is proposed to develop the facility in a single construction phase, as outlined in Chapter 4 Existing and Proposed Development in Volume 2 of this EIAR. Construction noise has been assessed under the following activities:

- Advance Works
- Development of Temporary Construction Site Compound
- Site Clearance
- Site Earthworks
- Installation of Site Services and Surface Water Management Systems
- Construction of Site Hard Stand and Granular Formation Surfaces
- Construction of Site Buildings and Structures
- Installation of Additional Ancillary Site Infrastructure and Elements

A full description of the proposed construction works to be undertaken as part of the proposed development is provided in Chapter 4 Existing and Proposed Development of this EIAR.

For noise modelling, a worst-case construction scenario was selected. Details of the assumed plant used during construction activities are outlined in Table 12-15, with results displayed at the closest noise sensitive locations. The closest residential dwelling at Coolbrook Cottages (R3), and the closest residential dwelling at the residences to the south west of the site (R6), were considered when carrying the modelling. A map showing the location of these receptors in Appendix 12.1.

As detailed in Chapter 13 - Traffic and Transportation of Volume 2 of this EIAR, average HGV traffic generation arising during construction activities is expected to be in the region of 12 HGV trips or less per day on average. Therefore, to assess potential noise impacts, 12 HGV movements per day have been assumed for the construction phase.

¹ Predicted construction noise levels are façade noise levels as per BS5228-1:2009+A1:2014. Façade noise levels include reflection from the building façade. Façade noise level = Free-field noise level + 3dB



Table 12-15: Construction Phase Assumed Plant

Phase	Plant	BS5228 Ref	Activity	% Percentage on time	Predicted Noise Level	
					R3	R6
Advance Works	Tracked excavator (22t)	C2.3	Clearing Site	80%	52.5	61.8
	Generator	C4.84	Miscellaneous	100%	49.2	58.5
	Articulated Dump Truck (23t)	C2.32	Tipping Fill	80%	48.5	57.8
	Lorry*	C11.9	Delivery/Removal of material off site	12 trips per day	41.3	42.4
Cumulative Noise					55.4	64.5
Development of Temporary Construction Site Compound	Telescopic handler	C4.54	Lifting Plant/Material	80%	53.1	62.1
	Mobile telescopic crane (80t)	C4.39	Lifting Plant/Material	80%	51.2	60.2
	Generator	C4.84	Miscellaneous	100%	49.2	58.2
	Lorry *	C11.9	Material delivery off site	12 trips per day	41.3	42.3
Cumulative Noise					56.4	65.3
Site Clearance	Hand held hydraulic breaker	C1.7	Breaking concrete	50%	72.4	65.2
	Dozer (14t)	C2.12	Ground excavation/earthworks	50%	59.9	52.7
	Tracked excavator (23t)	C10.8	Loading soil	50%	59.4	52.2
	Tracked excavator (22t)	C2.3	Ground excavation/earthworks	80%	59.2	52
	Tracked excavator (25t)	C2.19	Ground excavation/earthworks	50%	56.7	49.5



Phase	Plant	BS5228 Ref	Activity	% Percentage on time	Predicted Noise Level	
					R3	R6
	Generator	C4.84	Miscellaneous	100%	55.9	48.7
	Articulated Dump Truck	C2.33*	Delivery and removal of material	6 trips per day	39.6	35.7
	Lorry *	C11.9	Delivery of material off site	6 trips per day	37.9	34
Cumulative Noise					73.2	66
Site Earthworks	Tracked Excavator (25t)	C2.19	Ground excavation/ earthworks	80%	58	52.6
	Dozer	C5.12	Ground excavation/ earthworks	80%	57.2	51.8
	Articulated Dump Truck (23t)	C2.32	Loading soil	80%	54.5	49.1
	Vibratory roller	C5.27	Rolling & Compaction	80%	47.1	41.7
	Lorry*	C11.9	Delivery of material off site	6 trips per day	38	34.2
	Articulated Dump Truck	C2.33*	Delivery and removal of material	6 trips per day	37.8	34.4
Cumulative Noise					61.8	56.4
Installation of Site Services and Surface Water Management Systems	Tracked excavator (22t)	C2.3	Excavating	80%	60.4	54.2
	Mobile telescopic crane (80t)	C4.39	Lifting	80%	59.1	52.9
	Tracked Excavator (25t)	C2.19	Excavating	50%	57.9	51.7
	Diesel Generator	C4.84	Miscellaneous	100%	57.1	50.9
	Lorry*	C11.9	Delivery and removal of material	12 trips per day	42.4	38.3



Phase	Plant	BS5228 Ref	Activity	% Percentage on time	Predicted Noise Level	
					R3	R6
Cumulative Noise					64.8	58.7
Construction of Site Hard Stand and Granular Formation Surfaces	Poker vibrator	C4.33	Concrete works	80%	57	56.8
	Tracked excavator (22t)	C2.3	Excavating	80%	56.5	56.3
	Concrete mixer truck + truck mounted concrete pump + boom arm	C4.32	Pumping concrete	80%	56.4	56.2
	Large concrete mixer	C4.22	Concrete works	80%	54.2	54
	Diesel Generator	C4.84	Miscellaneous	100%	53.1	53
	Articulated Dump Truck (23t)	C2.32	Tipping Fill	80%	52.5	52.2
	Vibratory roller	C5.27	Rolling	80%	45.1	44.8
	Lorry*	C11.9	Delivery and removal of material	6 trips per day	38.4	35.9
	Articulated Dump Truck	C2.33*	Delivery and removal of material	6 trips per day	38.1	36
Cumulative Noise					63.1	63
Construction of Site Buildings and Structures	Angle grinder (grinding steel)	C4.93	Grinding	80%	59.2	53.3
	Telescopic handler	C4.54	Lifting Plant/Material	80%	57.2	51.2
	Poker vibrator	C4.33	Concrete works	80%	57.1	51.2



Phase	Plant	BS5228 Ref	Activity	% Percentage on time	Predicted Noise Level	
					R3	R6
	Concrete mixer truck + truck mounted concrete pump + boom arm	C4.32	Pumping concrete	80%	56.6	50.6
	Mobile telescopic crane (80t)	C4.39	Lifting Plant/Material	80%	55.2	49.3
	Large concrete mixer	C4.22	Concrete works	80%	54.4	48.4
	Diesel Generator	C4.84	Miscellaneous	100%	53.3	47.4
	Lifting Platform (x2)	C4.57	Lifting personnel	80%	45.7	39.8
	Lorry*	C11.9	Delivery and removal of material	12 trips per day	36.4	33
Cumulative Noise					65	59.1
Installation of Additional Ancillary Site Infrastructure and Elements	Angle grinder (grinding steel)	C4.93	Grinding	80%	63.3	56.1
	Telescopic handler	C4.54	Lifting Plant	80%	61.2	54
	Mobile telescopic crane (80t)	C4.39	Lifting Plant/Material	80%	59.4	52.1
	Diesel Generator	C4.84	Miscellaneous	100%	57.2	50.1
	Lifting Platform (x2)	C4.57	Lifting personnel	80%	49.8	42.6
	Lorry*	C11.9	Delivery and removal of material	12 trips per day	42	37.9
Cumulative Noise					67	59.7



The cumulative noise impact associated with construction phase activities was appraised, and it was found that the predicted noise levels are compliant with the 70 dB $L_{Aeq,1hr}$ noise limit derived from BS 5228-1:2009+A1:2014 at all locations with the exception of Coolbrook Cottages during Site Clearance Works. The predicted noise level at this location was found to be 73.2 dB L_{Aeq} during Site Clearance, which exceeds the limit by over 3 dB. It is noted however that the model assumes all plant operating simultaneously at the nearest point to the noise sensitive, which is unlikely to be the case in reality. Mitigation measures are recommended during Site Clearance activities and are outlined in Section 12.7.1.

Having regard to the phasing of the proposed development (defined in chapter 4 Existing and Proposed Development, of Volume 2 of this EIA), the proposed construction activities and the operation of the existing waste facility activities will occur simultaneously for a period of time. The noise impact from the proposed development construction activities and the operation of the existing waste facility activities should therefore be considered cumulatively and appraised against noise limits from BS 5228-1:2009+A1:2014.

Table 12-16 summarises the cumulative construction noise and the operation of the existing waste facility operational noise during the construction period, for the main activities, at the closest locations. Noise from the existing facility has been assumed to be 55 dB L_{Aeq} , which is the current noise limit defined for the facility under its Waste Facility Permit. The construction noise includes a façade correction, whereas the emission limit for operational site noise is a freefield level. Therefore, a conservative +3dB correction has been applied to the facility noise, so that similar noise levels are being compared.

The cumulative noise from the operation of the existing waste facility in-combination with the carrying out of construction activities meets the applicable noise construction noise limits at all locations, again with the exception of Coolbrook Cottages during Site Clearance Works. Again, mitigation measures are recommended during Site Clearance activities and are outlined in Section 12.7.1.



Table 12-16: Cumulative noise from Construction Activities and Operation Existing Waste Facility.

Construction Activity	Predicted Construction Noise LAeq, 1hour		Facility Noise LAeq +3dB façade correction	Construction Noise and Facility Noise	
	R3	R6		R3	R6
Advance Works	55.4	64.5	58	59.9	65.4
Development of Temporary Construction Site Compound	56.4	65.3	58	60.3	66.0
Site Clearance	73.2	66	58	73.3	66.6
Site Earthworks	61.8	56.4	58	63.3	60.3
	64.8	58.7	58	65.6	61.4
Installation of Site Services and Surface Water Management Systems	63.1	63	58	64.3	64.2
Construction of Site Hard Stand and Granular Formation Surfaces	65	59.1	58	65.8	61.6
Construction of Site Buildings and Structures	67	59.7	58	67.5	61.9
Installation of Additional Ancillary Site Infrastructure and Elements	55.4	64.5	58	59.9	65.4

For the purpose of this assessment, a conservative assumption was made that mobile plant will operate for a percentage on-time of 80% unless stated otherwise, and mobile plant is located such that the distance between the respective construction activity and the nearest receptor is at a minimum. In practice, all mobile plant will not operate simultaneously and the distance between the plant and the nearest receptor will often be greater than the distances used in the noise model. Hence, it is expected that the potential noise impact will be lower than that modelled.



12.6.3 Potential Impacts during Operational Phase

The main activities during the operation of the proposed development are waste acceptance, processing, storage and onward transfer. A detailed description of these activities is provided in Chapter 4 - Existing and Proposed Development, of Volume 2 of this EIAR. This assessment considered the facility operating at its maximum capacity.

The proposed facility will have the following hours of operation:

- hours of operation of the facility for waste acceptance, handling and consignment from the facility - 00:00 to 00:00 Monday to Sunday inclusive
- hours of operation of the facility for waste processing – 07:00 – 23:00 Monday to Sunday inclusive.

While the facility is proposed to operate on a 24/7 basis, it is expected that the vast majority of waste acceptance, handling and consignment will occur during daytime and evening hours. Waste processing at fixed processing plant will not take place during the night.

The main noise generating activities associated with waste acceptance, handling, processing and consignment that have been assumed as part of the noise assessment for the different operational phase elements are listed below, with plant detailed within Tables 12.17 and 12.18.

- rMSW processing & onward transfer at building MRF1, including the use of loading shovel, grab loader, screener and conveyor.
- Food waste bulking and onward transfer using HGVs and loading shovel at building MRF1
- MDR waste bulking & onward transfer at building MRF2 using loader & HGVs
- C&D processing & onward transfer using loading shovel, grab loader and process line, which includes the following:
 - Pre-shredder
 - Long object separator
 - Primary and overband magnets
 - Waste screen
 - 'Flip flop' screen
 - Drum separators
 - Ballistic separator
 - Optical sorter
 - QC picking stations

Chapter 13 - Traffic and Transportation of Volume 2 of this EIAR provides details on potential HGV traffic generation. The forecasted daily HGV traffic generation arising from the operational phase is 140-203 HGV imports and 54 HGV exports. For the purpose of assessing the potential noise impacts, a 'worst-case' value of 203 daily HGV imports has been assumed, along with 54 HGV exports, resulting in a total of 257 daily HGV imports and exports during the operational phase. It is assumed that approx. 75% of these will be during the daytime period 07:00-19:00, with 12.5% during evening (19:00 -23:00) and 12.5% at night (23:00-07:00).



Noise from moving vehicles and mobile and stationary plant have been predicted according to the International Standard ISO 9313-2: 1996 *Acoustics -Attenuation of sound during propagation outdoors – Part 2: General Method of calculation* and using Softnoise Predictor-LimA software.

The geographical features of the area, including existing buildings, all noise sources and propagation effects were accounted for in the model. This includes site structures and neighbouring dwelling buildings. The ground factor ranges from 0 for hard reflective surfaces to 1 for soft porous surfaces. Roads and hardstanding's were modelled as hard surfaces. Other surfaces can be described as porous surfaces and would have a ground factor akin to 1. However, a conservative ground factor of 0.75 was used to model the porous surfaces. Atmospheric conditions of 10 °C and 70 % humidity were used as they represent a reasonably low level of air absorption. In absence of representative spectral data, an air absorption rate corresponding to the 250 Hz octave band was used. twenty one no. receptors were modelled. All noise sensitive locations were bungalows/cottages. A receptor height of 1.5m was modelled for the dwellings. There are also a significant number of commercial premises and these have not been considered as noise sensitive locations and these have not been considered as part of the assessment.

Activities in the yard include, vehicles idling at the reception/weighbridge area, vehicles entering/leaving buildings MRF1, MRF 2 and MRF3. The modelling assumes that all plant will operate simultaneously within the buildings with doors closed. It has been assumed that all stationary plant will operate 100% of the time for daytime and for 25% (one hour) evening, with no fixed plant operating during night-time. Mobile plant will operate 50% of the time for day and evening and 20% of the time at night, with waste vehicles tipping fill assumed to occur for 15% of the time during day and evening, and 5% of the time at night. The truck wash is expected to operate for brief periods during daytime hours only. It has been assumed that the truck wash will operate for 5% of the time during the daytime period only. It has been assumed that the vehicle workshop will be operational for 50% of the time during day and evening, and 20% at night and that activities will occur in storage building MRF2 10% of the time during day, evening and night.

The reality is that many of the noise sources will only operate intermittently, versus the assumption of continuous characteristics used in the noise model. This makes the noise modelling assessment a conservative exercise. Details on the main noise sources and assumptions are presented in Table 12-17. The A-weighted octave band sound power level data for each of the main noise sources are presented in Table 12-18.

Table 12-17: Noise Sources - Details

Noise Source	Number	Hours of Operation	Location	Source of Data
Waste Imports & Exports				
Waste Vehicle – Travel to and from facility*	257 maximum 193 daytime 32 evening 32 night-time	00:00 to 00:00	Throughout site	BS 5228-1 C8.21
Waste Vehicle / Other Vehicles – Idling	257 maximum 193 daytime 32 evening 32 night-time	00:00 to 00:00	Weighbridge	BS 5228-1 C4.19 ^Ω
rMSW Process Line Fixed & Mobile Plant (MRF1)				



Noise Source	Number	Hours of Operation	Location	Source of Data
Screening Plant	1	07:00 to 20:00	rMSW Process Line inside MRF1	In-house database
Terex Fuchs MHL331	1	00:00 to 00:00 (50% daytime & evening, 20% night)	Inside and outside MRF2	Manufacturers data and BS 5228-1 C4.10
Case Loader 721 GXR	1	00:00 to 00:00 (50% daytime & evening, 20% night)	Inside and outside MRF2	Manufacturers data and BS 5228-1 C2.26
Waste Vehicle– Tipping Fill	1	00:00 to 00:00 (15% daytime & evening, 5% night)	Inside MRF 1	BS 5228-1 C2.30
Conveyor	1	07:00 to 20:00	rMSW Process Line inside MRF1	BS 5228-1 C10.21
Waste Storage (MRF2)				
Wheeled Excavator	1	00:00 to 00:00 (10% daytime, evening & night)	Inside and outside MRF2	BS 5228-1 C4.10
Waste Vehicle– Tipping Fill	1	00:00 to 00:00 (10% daytime, evening & night)	Inside MRF2	BS 5228-1 C2.30
Case Loader 721 GXR	1	00:00 to 00:00 (10% daytime, evening & night)	Inside and outside MRF2	Manufacturers data and BS 5228-1 C2.26
C&D Process Line Fixed & Mobile Plant (MRF3)				
Trommel	1	07:00 to 20:00	C&D Process Line inside MRF3	Noise emissions from screener (BS 5228-1 C10.15)
Case Loader 721 GXR	1	00:00-00:00 (50% daytime & evening, 20% night)	Inside and outside MRF3	Manufacturers data and BS 5228-1 C2.26
Shredder	1	07:00 to 20:00	C&D Process Line inside MRF3	Manufacturers data
Screening Plant	1	07:00 to 20:00	C&D Process Line inside MRF3	BS 5228-1 C10.15



Noise Source	Number	Hours of Operation	Location	Source of Data
Wind Shifter	1	07:00 to 20:00	C&D Process Line inside MRF3	Based on measurements of similar equipment at an existing site
Terex Fuchs MHL331	1	07:00-08:00 (50% daytime, 20% night)	Inside and outside MRF3	Manufacturers data and BS 5228-1 C4.10
Waste Vehicle– Tipping Fill	1	00:00 to 00:00 (15% daytime & evening, 5% night)	Inside MRF3	BS 5228-1 C2.30
Vehicle Workshop				
Diesel Generator	1	00:00 to 00:00 (50% day, evening & 20% night)	Inside Vehicle Workshop	BS 5228-1 C4.84
Angle Grinder	1	00:00 to 00:00 (50% day, evening & 20% night)	Inside Vehicle Workshop	BS 5228-1 C4.93
Truck Wash				
Water Jet Pump	1	07:00 to 19:00 (5% daytime)	At Truck Wash	BS 5228-1 C3.13

Table 12-18: Noise Sources – Sound Power Level - L_{WA} , dB(A)

Equipment	A-weighted Octave Band Centre Frequency (Hz)								Overall
	63	125	250	500	1k	2k	4k	8k	L _{WA}
Waste Imports & Exports									
Waste Vehicle– Travel to and from facility*	83.8	95.9	97.4	99.8	99	99.2	94	85.9	105.8
Waste Vehicle / Other Vehicles – Idling	78.8	82.9	84.4	89.8	94	95.2	89	77.9	99.1
MRF1 (rMSW Process Line)									
Waste Screener	85.8	93.9	98.4	103.8	102	103.2	100	90.9	109.1
Wheeled Excavator	65.8	71.9	82.4	88.8	90	86.2	80	71.9	94.0
Waste Vehicle Tipping Fill	86.8	85.9	97.4	97.8	101	103.2	96	89.9	107.1



Equipment	A-weighted Octave Band Centre Frequency (Hz)								Overall
	63	125	250	500	1k	2k	4k	8k	L _{WA}
Conveyor	74.8	86.9	92.4	97.8	98	97.2	95	85.9	103.7
MRF2 (Storage)									
Wheeled Excavator	65.8	71.9	82.4	88.8	90	86.2	80	71.9	94.0
Waste vehicle– Tipping Fill	86.8	85.9	97.4	97.8	101	103.2	96	89.9	107.1
Case Loader 721 GXR	84.8	89.9	92.4	98.8	97	95.2	89	79.9	103
MRF3 (C&D Process Line)									
Trommel**	85.8	93.9	98.4	103.8	102	103.2	100	90.9	109.1
Case Loader 721 GXR	84.8	89.9	92.4	98.8	97	95.2	89	79.9	103
Shredder¥	-	-	102	-	-	-	-	-	102
Screening Plant	85.8	93.9	98.4	103.8	102	103.2	100	90.9	109.1
Wind Shifter ¥	-	-	-	-	-	-	-	-	106.9
Terex Fuchs MHL331	73.8	79.9	90.4	96.8	98	94.2	88	79.9	102
Waste vehicle– Tipping Fill	86.8	85.9	97.4	97.8	101	103.2	96	89.9	107.1
Vehicle Workshop									
Diesel Generator	76.8	83.9	95.4	94.8	97.0	94.2	85.0	73.9	101.7
Angle Grinder	58.8	62.9	71.4	84.8	98	106.2	102.0	99.9	108.7
Truck Wash									
Water Jet Pump	76.8	86.9	81.4	82.8	83	83.2	77	66.9	91.2
* - Drive-by maximum sound pressure level/ sound power level ** Screener noise emissions assumed for trommel. ¥ - No octave band data available									

A detailed description of the proposed site infrastructure is provided in Chapter 4 Description of Existing and Proposed Development. There is potential for noise breakout from facility buildings through the building façade, roof and fast acting roller shutter doors. Noise breakout from the facility buildings has been included as part of the detailed operational noise model. For the purpose of this assessment, it has been assumed that roller doors will be closed. The sound insulation properties of building elements modelled is outlined in Table 12-19.



Table 12-19: Minimum Sound Insulation of Building Elements

Building element	Source of Data	Minimum Sound Insulation Performance							
		Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Wall Configuration	Manufacturers data	12	16	30	40	44	61	64	-
Roof Configuration	Manufacturers data	11	19	36	48	54	61	73	-
Roller shutter door	Noise modelling software database	6	12	15	17	20	21	21	20

The sound insulation performance data in Table 12-19 for the walls and roofs of the proposed facility buildings (MRF 1-3 & Vehicle Workshop) is based on the following configurations, as per manufacturer data provided by Kingspan (A guide to acoustic solutions using Kingspan insulated panels, 2016):

Walls: Insulated trapezoidal wall panel (Kingspan 40mm thick KS 1000 RW), 50mm thick acoustic insulation (33kg/m³) and 0.7mm profiled steel liner sheet.

Roofs: Insulated trapezoidal roof panel (Kingspan 40mm thick KS 1000 RW), 120mm thick acoustic insulation (60kg/m³) and 0.7mm profiled steel liner sheet.

Given the proximity of the facility to nearby residences to the west, fast acting roller doors, and sound insulating panels that meets the minimum sound insulation performance defined above have been proposed for the buildings on-site as ‘embedded’ design mitigation measures in terms of noise breakout and have been considered when carrying out the noise prediction modelling.

Site operations are to occur during daytime, evening and night-time periods, as detailed in Table 12-17. Predicted operational noise levels were calculated at 21 no. receptor locations and assessed against operational noise criteria described in Section 12.4.2. As previously noted, there are several commercial buildings in the vicinity of the development, and these have not been considered as noise sensitive locations. All dwellings within the study area are bungalows/cottages and a receptor height of 1.5 m was modelled.

Table 12-20: Predicted Operational Noise Levels

Receptor ID	Predicted Noise Levels (L _{Aeq,30min})					
	Daytime	Daytime Limit	Evening	Evening Limit	Night-time	Night-time Limit
R1	49.1	55	45.4	50	40.4	45
R2	49.5	55	45.7	50	40.6	45
R3	50	55	46.2	50	41	45
R4	49.8	55	45.9	50	40.6	45
R5	51.5	55	47.6	50	43.6	45



Receptor ID	Predicted Noise Levels ($L_{Aeq,30min}$)					
	Daytime	Daytime Limit	Evening	Evening Limit	Night-time	Night-time Limit
R6	52	55	47.8	50	43.8	45
R7	49.9	55	46.2	50	42.3	45
R8	49.6	55	45.9	50	42	45
R9	48.2	55	44.7	50	40.8	45
R10	48.5	55	45	50	41.1	45
R11	47.6	55	44.1	50	40.3	45
R12	47	55	43.5	50	39.8	45
R13	46.3	55	42.9	50	39.2	45
R14	45.7	55	42.3	50	38.6	45
R15	40.7	55	37.1	50	33.4	45
R16	40.3	55	36.8	50	33.1	45
R17	40.2	55	36.5	50	32.8	45
R18	39	55	35.6	50	31.8	45
R19	38.9	55	35.5	50	31.7	45
R20	38.4	55	35	50	31.3	45
R21	37.4	55	33.8	50	30.1	45

The predicted noise levels are below the daytime, evening and night-time noise limits defined in the EPA's NG4 guidelines for all properties.

The predicted noise levels are also below the ambient noise levels measured at the four noise monitoring locations. This agrees with the measurements undertaken at noise sensitive locations in the vicinity of development with and without the development operating. Therefore, it is likely that traffic noise will mask the noise from the proposed development. However, it is possible that operational noise from the proposed development will be audible at the nearest noise sensitive locations, especially when traffic noise subsides. In terms of the significance of impact, as the existing ambient noise levels are above the predicted noise for the proposed development, the potential impact from operational noise levels is **not significant**.

Road Traffic Noise

The potential traffic noise impacts have been assessed with respect to the Highways Agency's Design Manual for Roads and Bridges LA111: Noise and Vibration, Revision 1, 2020.



The proposed development will result in an increase in traffic levels along the Ballycoolin Road as detailed in the Chapter 13 Traffic & Transportation. The proposed intensification of throughput at the facility to 300,000t per annum will result in an average of 140-203 HGV imports and 54 HGV exports daily, with no significant increase in the use of private cars or light commercial vehicles. For the purpose of assessing the potential noise impacts, a 'worst-case' value of 203 daily HGV imports has been assumed, along with 54 HGV exports, resulting in a total of 257 daily HGV imports and exports during the operational phase.

The predicted change in road traffic noise was modelling using CRTN². When the predicted operational traffic flow is added to the existing baseline traffic flow, the baseline noise level shows a **negligible**³ increase in predicted traffic noise level of less than 0.5 dB.

12.6.4 Cumulative Noise Impacts

The construction phase of the proposed development may also coincide with the construction of the following proposed developments.

- Permission was granted on 07th July 2022 for development comprising: (i) construction of 5 no. industrial / warehouse / logistics units contained within 3 no. blocks and creation of vehicular access point (Planning reference: FW22A/0061), c.150m east of the proposed development.
- Permission was granted on 26th May 2022 for the construction of a security hit, 2 no. warehouse/ light industrial units, warehouse/ logistic unit and associated site works (Planning reference: FW21A/0149), c.200m northeast of the proposed waste facility.
- Permission was granted on 01st June 2022 for the construction of 4 no. industrial units consisting of offices, workshops and accessories (Planning reference: FW21A/0190), c.400m northeast of the proposed waste facility.

This may result in an in-combination or cumulative noise impact.

Considering predicted noise levels for the construction phase of the proposed development, and with the adoption of proposed construction phase noise mitigation measures (described in Section 12.7), noise associated with construction phases activities will be managed and controlled and will not contribute in a significant way to cumulative noise in the receiving environment.

Cumulative impacts during the operational phase have been considered. There was a former breakers yard adjacent to the development, but this has not been operational for some time and therefore there is no potential cumulative impact. There are several other commercial operations within 500m of the proposed development but the noise emissions from these are masked by road traffic noise on the Ballycoolin Road, Cappagh Road and the M50 motorway, which is the dominant noise source in the area. Cumulative noise effects in-combination with the proposed development will not occur.

The proposed development will increase road traffic on the Ballycoolin Road. Ballycoolin Road is also used by other commercial operations in the vicinity of the proposed development. The cumulative traffic noise impact was considered in the previous section on Road Traffic Noise.

² Calculation of Road Traffic Noise (CRTN), Department of Transport Welsh Office, HMSO 1988

³ Highways Agency's Design Manual for Roads and Bridges LA111: Noise and Vibration, Revision 1, 2020 (Table 12-8)



12.7 Mitigation Measures

12.7.1 Construction Phase Mitigation

There is a potential adverse impact at the closest residential dwellings to the proposed development (Coolbrook Cottages) during the site clearance phase of construction. To mitigate the noise impact, it is recommended that the following noise mitigation measures will be implemented throughout the construction phase:

- Installation of temporary hoarding around the site to screen noise from the site.
- Periodic monitoring of noise at the nearest noise sensitive locations during the construction works, in particular during site clearance activities taking place in close proximity to Coolbrook Cottages.
- If the proposed limits are exceeded during the construction phase, site operations must cease and measures will be put in place to ensure a reduction in noise on-site (e.g. phasing works in a manner that reduces level of activity or plant operation at any one point in time, selecting quieter working methods and using noise barriers/enclosures to screen/enclose noisy equipment.
- Working hours at the site during the construction phase will be limited to 07:00-19:00hrs on weekdays and 08:00-14:00hrs on Saturdays (unless otherwise agreed with the Local Authority). There will be no construction works undertaken on Sundays or public holidays.
- A speed limit of 15km/h will be enforced on-site.
- Drop heights for construction materials will be minimised.
- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006).
- All staff including mobile plant operatives will be made aware of the need to minimize noise levels in areas that are close to nearby residences.

In terms of construction practices, the main control measures will be control of noise at source using the following methods in line with Clause 8 'Control of noise' of BS 5228-1:2009+A1:2014 throughout the construction phase:

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General).
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution).
- All construction plant to be used on site will have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment).
- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment).
- Regular and effective maintenance of site machinery will be carried out to ensure that all pieces of equipment are in good working order. With efficient use of well-maintained mobile equipment, considerably lower noise levels than those predicted can be attained (clause 8.2.6 Maintenance).



In addition, the following best practice measures are proposed:

- Training of site staff in the proper use and maintenance of tools and equipment.
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.
- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum.
- Plant start-up will be sequential rather than all together.
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations.

12.7.2 Operational Phase Mitigation

The noise prediction results from the daytime, evening and night-time scenarios demonstrate that the predicted noise levels are below the noise limits at all receptor locations. The noise modelling is based on several assumptions and embedded design mitigation measures, which are required to be implemented to meet the noise limits. These are outlined below:

Roller Shutter Doors

The noise modelling is based on closed roller shutter doors. Fast acting roller shutter doors will be required. To meet the noise criteria there will be operational restrictions, e.g. doors will need to be timed to close as soon as possible after vehicle entry and exit. Noisier plant will not be operated in instances where doors are left open for a significant period of time.

Minimum Sound Insulation of Building Elements

The minimum sound insulation performance of building elements outlined in Table 12-19 must be achieved for the proposed buildings (MRF1, MRF2, MRF3 & Maintenance Building). A suitable configuration must achieve the specified sound insulation performance, at a minimum, with the final design and construction overseen by an acoustic consultant.

Truck Wash

The use of the truck wash should be restricted to daytime hours only. There should be no truck wash operations during the evening and night periods (19:00hrs – 07:00hrs).

In addition to the mitigation measures specified above, noise impacts will be mitigated where reasonably practicable by:

- Orientating plant to minimise the noise impact on nearby receptors where practicable;
- Ensuring that noisy plant and equipment are not used for long periods of time and at inappropriate times;
- Phasing of works and reduce percentage on-time to lower the noise impact;



- Carrying out regular monitoring of noise levels as per requirements of the EPA licence. Carrying out additional monitoring during critical periods; and
- Investigate and record noise complaints and take action to mitigate where levels are above the licence limit.
- A speed limit of 15km/h will be enforced on-site.
- Drop heights for waste materials will be minimised.

The above mitigation measurements will also be implemented for the wider development to minimise the noise impact from the proposed development.

12.8 Monitoring

Periodic monitoring of noise at the nearest noise sensitive locations during the construction works will take place, in particular during site clearance activities taking place in close proximity to Coolbrook Cottages.

Periodic monitoring of noise levels on site will be a requirement of the EPA licence for the site. Noise limits defined in this licence will need to be adhered to and will be applied from the commencement of the 'waste activity' during the operational phase of the development.

12.9 Residual Impacts

Construction phase activities and operational phase activities will not have a significant adverse effect on surrounding noise sensitive locations, having regard to the noise prediction modelling undertaken and considering the implementation of the identified noise mitigation measures.

During the construction phase, noise predictions indicate that there is potential for short term noise impacts on nearby receptors during the site clearance works. With the adoption of the proposed construction phase mitigation measures, these impacts will be **Not Significant**.

The predicted operational phase noise emissions are below the noise limit values detailed in the EPAs NG4 guidance document. The predicted operational noise levels are lower than the current ambient noise levels at nearby noise sensitive locations and the current ambient noise will serve to mask noise from the proposed development. The predicted change in road traffic noise resulting from site operations was modelled using CRTN. When the predicted operational traffic flow is added to the existing baseline traffic flow, the baseline noise level shows a negligible increase in predicted traffic noise levels. The predicted operational phase noise impacts are therefore **Not Significant**.

12.10 Interactions

Noise has several interactions with other parameters. The most significant interactions are between noise and traffic, and noise and human beings.



With increased traffic movements due to the proposed development, the traffic noise levels will increase. There will be an increase in traffic volumes on the Ballycoolin Road, but this will not significantly differ from the existing pattern of traffic movements in the area which has a well-established road network. Thus, the impact from traffic associated with the proposed development on the ambient noise environment near the site is predicted to be negligible.

There is potential for an adverse impact on the noise environment on site activity and it has the potential to impact human health as set out in Chapter 7: Population and Human Health. Residual impacts on human health from noise impacts during operation of the development will not be significant and the noise levels during the operational phase will typically be less than the current ambient noise levels.

12.11 References

1. International Standard Organisation, ISO 1996-1:2016, Acoustics – Description, measurement and assessment of environmental noise -- Part 1: Basic quantities and assessment procedures
2. International Standard Organisation, ISO 1996-2:2017, Acoustics – Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels
3. Environmental Protection Agency, Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to. Scheduled Activities (NG4) (2016)
4. Environmental Protection Agency, Guidelines on the information to be contained in the Environmental Impact Assessment Reports, 2022.
5. International Standard Organisation, ISO 9613-2:1996, Acoustics – Attenuation of Sound During Propagation Outdoors
6. British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound
7. BS 7385-2:1993, Evaluation and measurement for vibration in buildings: Guide to damage levels from ground borne vibration
8. BS 6472-1:2008, Guide to evaluation of human exposure to vibration in buildings: Vibration sources other than blasting
9. BS 5228-1:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites – Part 1: Noise
10. BS 5228-2:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration
11. A guide to acoustic solutions using Kingspan insulated panels, Kingspan 2016
12. Calculation of Road Traffic Noise (CRTN), Department of Transport Welsh Office, HMSO 1988
13. Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004, Transport Infrastructure Ireland
14. Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, 2014, Transport Infrastructure Ireland
15. Dublin Agglomeration Environmental Noise Action Plan December 2018 – July 2023 Volume 3 Fingal County Council, December 2018



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