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Vastint Cardiff BV,
Waterside Business Park,
Lamby Way,
Cardiff

NOISE ASSESSMENT

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EXECUTIVE SUMMARY

BWB Consulting has been appointed by Vastint Cardiff BV to undertake an environmental noise assessment for a proposed waste transfer station on Lamby Way in Rumney, Cardiff.

This assessment has been undertaken based on the results of a weekday daytime and night-time baseline noise survey. The results of the survey have been assessed in accordance with current guidance, and in line with an assessment methodology submitted to City of Cardiff Council.

The noise assessment has covered the noise impact from development generated road traffic noise, which was identified to be negligible.

Noise from operational activities on site onto nearby noise sensitive receptors has also been assessed. During the daytime, the noise has been predicted to be 3 dB below the adopted criterion. During the night-time, the assessment has indicated a significant adverse impact. With night-time skip deliveries/removal and usage of reciprocal saws restricted, the adopted criterion can be met.

Appropriate design limits for noise from fixed plant to achieve have also been set.

Based on the results of the assessment, with appropriate mitigation measures in place, it is considered that noise need not be a determining factor in the granting of detailed planning permission for the proposed scheme.

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1.0 INTRODUCTION

1.1 BWB Consulting has been appointed by Vastint Cardiff BV to undertake an environmental noise assessment for a proposed waste transfer station on Lamby Way in Cardiff.

1.2 The Site of the Proposed Development is currently cleared and secured with fencing, in a predominantly industrial and commercial area.

1.3 This assessment has been undertaken based on the results of a weekday daytime and night-time baseline noise survey and a separate noise survey at an existing waste transfer station. The results of the survey have been assessed in accordance with current guidance, and in line with an assessment methodology submitted to City of Cardiff Council (CCC).

1.4 Where appropriate, consideration has been given to noise mitigation measures to demonstrate how a commensurate level of protection could be afforded to existing noise sensitive receptors in the local area.

1.5 This report is necessarily technical in nature, so to assist the reader, a glossary of acoustic terminology can be found in **Appendix 1**.

Site Setting

1.6 The Site is located to the north of Lamby Way in Rumney, Cardiff (CF3 2ET).

Figure 1.1 – Site location

1.7 The site is located within the north-eastern extents of Cardiff, approximately 500m south of Rumney. The site lies within a predominantly urban environment with industrial buildings and residential properties dominating the wider surrounds. The site is bordered by other industrial and commercial buildings of the Waterside Business Park, to the

south, west and east. To the north a treeline and railway line separate the site from the residential area of Rumney. The site measured approximately 0.9ha.

1.8 The nearest noise sensitive receptors to the site are dwellings located on New Road, as close as 60 metres from the northern site boundary.

Proposed Development

1.9 Development proposals for the site involve the relocation of an off-site waste transfer station onto the Lamby Way site, together with the construction of a series of bunkers and a small office. The current site layout has been provided in **Figure 1.2** and shown in full in **Appendix B**.

Figure 1.2 – Proposed Site Plan

1.10 The operations on site will be relocated from the existing Biffa Waste Services site off Curran Road in Cardiff, and it is anticipated that there will be no change in permitted activities or operations at the new site. The existing Curran Road site is shown in **Figure 1.3**.

Figure 1.3 – Biffa Waste Services - Curran Road site

1.11 The Curran Road site physically treats waste material which includes sortation, segregation, bulking, volume reduction and repackaging operations.

1.12 The new site will be accessed from the Waterside Business Park internal road network off Lamby Way, which is already currently used by other businesses in the wider area.

1.13 It is understood that operation hours will typically be 07:00 – 16:30 Monday to Friday, however it is assumed that the Site could operate 24 hours a day, 7 days a week.

1.14 It is understood that there will be 11 two way movements of HGVs (22 single way) and 16 two way movements of cars, (32 single way) in a typical weekday period. The delivery vehicle fleet will include 7.5ton, 17ton, 26ton and ROLONOF trucks. On site vehicle use is restricted to fork lift trucks – Linde H25D (x2) and H15D (x1). It is understood that typically 83% of vehicle movements occur between 09:00 and 16:00 and just 6% occur before 08:00.

2.0 STANDARDS AND GUIDANCE

Planning Policy Wales – Edition 9 – November 2016

2.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs). Procedural advice is given in circulars and policy clarification letters. It translates the Welsh Government's commitment to sustainable development into the planning system so that it can play an appropriate role in moving towards sustainability.

2.2 Chapter 13 'Minimising and Managing Environmental Risks and Pollution' relates to the noise aspects of planning policy in Wales, and identifies that by controlling where development can take place and what operations may be carried out, the planning system has an important role in avoiding or minimising the adverse effects of any environmental risks on present or future land use.

2.3 Section 13.15 'Development management and noise and lighting' states:

> *"13.15.1 Noise can be a material planning consideration, for example in proposals to use or develop land near an existing source of noise or where a proposed new development is likely to generate noise. Local planning authorities should make a careful assessment of likely noise levels and have regard to any relevant Noise Action Plan before determining such planning applications and in some circumstances it will be necessary for a technical noise assessment to be provided by the developer."*

Technical Advice Note (Wales) 11, 'Noise', Welsh Office, 1997

2.4 This TAN provides guidance on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development.

2.5 It provides advice on the consideration of noise during the development plan and control (management) processes as well as noise exposure categories for different types of activity which should be taken into account during the consideration of proposals for residential development.

2.6 Paragraph 8 states that local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance, whilst paragraph 9 highlights that noise characteristics and levels can vary substantially according to their source and the type of activity involved. Further advice on noise generating development is provided in Annex B of the document.

2.7 In November 2015, the Minister for Natural Resources issued CL-01-15 'Updates to Technical Advice Note 11: Noise – Noise Action Plan (2013-18) Commitments', which reflects updates to British standards and legislative changes that have occurred since the publication of TAN 11 in 1997. This includes an update to Annex B. Paragraph B17 states:

> *"The likelihood of adverse impacts arising from noise of an industrial and/or commercial nature can be assessed, where the application of BS 4142:2014 is appropriate, using the guidance set out in that standard… In addition, general guidance on acceptable sound levels within buildings can be found in BS 8233:2014."*

BS 4142: 2014 Methods for Rating and Assessing Industrial and Commercial Sound

2.8 The BS 4142 Standard describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

2.9 The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. The Standard advises the purpose of the methodology includes the assessment of sound from any plant and activities associated with existing industrial and/or commercial uses at proposed residential dwellings.

2.10 If appropriate, the specific sound level of the source ($L_{Aeq,T}$) is corrected, by the application of one or more corrections for acoustic features such as tonal qualities and/or distinct impulses, to give a 'rating' level ($L_{Ar,Tr}$).The Standard effectively compares and rates the difference between the rating level of the specific sound and the typical background sound level ($L_{A90,T}$) in the absence of the specific sound.

2.11 The Standard advises that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) the source in question operates or is proposed to operate in the future.

2.12 Comparing the rating level with the background sound level, BS 4142 states:

> *"Typically, the greater this difference, the greater the magnitude of impact.*
>
> *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
>
> *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
>
> *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

BS 8233:2014: Guidance On Sound Insulation And Noise Reduction For Buildings

2.13 This standard provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance

on assessing the effects of changes in the external noise levels to occupants of an existing building.

2.14 The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the following criteria set out in **Table 2.1** below:

Table 2.1: Summary of Internal Ambient Noise Levels to be achieved in Habitable Rooms when Assessed in Accordance with BS 8233

Activity	Location	Period	
		07:00 to 23:00 Hours, i.e. Daytime	23:00 to 07:00 Hours, i.e. Night-time
Resting	Living Room	35 dB $L_{Aeq, 16\ Hour}$	-
Dining	Dining Room/area	40 dB $L_{Aeq, 16\ Hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16\ Hour}$	30 dB $L_{Aeq, 8\ Hour}$

2.15 Whilst BS 8233:2014 recognises that a guideline value may be set in terms of SEL or L_{AFmax} for the assessment of regular individual noise events that can cause sleep disturbance during the night-time, a specific criterion is not stipulated. Accordingly, reference has been made in this assessment to the World Health Organisation (WHO) 1999: *Guidelines for Community Noise*.

2.16 With respect to external amenity space such as gardens and patios it is stated that it is desirable that the noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. It is then confirmed that higher external noise criteria may be appropriate under certain circumstances such as within city centres urban areas, and locations adjoining the strategic transportation network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource.

World Health Organisation (Who) 1999: Guidelines for Community Noise

2.17 As with the 'good' and 'reasonable' criteria in BS8233, the L_{AFmax} criterion in BS8233 is largely concordant with the World Health Organisation (WHO) guidance: 1999: *Guidelines for community noise*. This document draws upon guidance from Vallet and Vernay, which states:

> *"For good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10-15 times per night"*

The Design Manual for Roads and Bridges (DMRB): Volume 11: Environmental Assessment

2.18 Section 3 Part 7 of this document is pertinent to noise and vibration and was first published by the Department of Transport in 1993 with subsequent amendments, the

latest of which is November 2011 (reference HD213/11 Revision 1). This document sets out procedures for undertaking the environmental assessment of new road schemes, including the assessment of noise impacts from road traffic. In particular, Section 3 Part 7 describes a method for assessing the severity of a noise impact, in terms of the number of people who will be bothered by any noise increases/decreases due to a new road scheme. When undertaking a DMRB assessment, the methodology contained within the Department for Transport 1988 document *Calculation of Road Traffic Noise* (CRTN) should be used to calculate levels of road traffic noise.

2.19 Although the DMRB strictly applies to new road schemes, the principles of the approach contained within the document can also be applied to the assessment of noise from road traffic in general. The Proposed Development has the potential to affect road traffic noise levels along existing roads, hence there is a need for such an assessment.

2.20 The DMRB assessment methodology suggests that the magnitude of noise changes from a project should be classified into levels of impact. Section 3 Part 7 considers how the magnitude of change can be affected by whether a noise level change occurs in the short term (e.g. as a result of a sudden opening of a scheme), or in the long term (e.g. gradually over time, such as that associated with natural traffic growth).

2.21 The example classification scale for short term changes is the most stringent and is presented below:

Table 2.2: Classification of Magnitude of Noise Changes in the Short Term

Noise Change, $L_{A10, 18h}$, dB	Magnitude of Change
0	No Change
0.1 to 0.9	Negligible
1.0 to 2.9	Minor / Low
3.0 to 4.9	Moderate / Medium
5.0+	Major / High

Consultation with City of Cardiff Council

2.22 At the pre-application consultation stage, noise comments were received on 15 December 2016 from Mr S Thayer, Neighbourhood Services Officer in the Shared Regulatory Services department of CCC by e-mail (document reference SJT/PC/PA/16/00157/MJR). In summary it was requested that the acoustic report should consider existing noise levels from nearby roads and the railway, an assessment of the expected impact of noise from the proposed activities, existing and proposed plant noise levels and details of any mitigation measures that may be required as a result of the assessment.

2.23 The pre-consultation response also included a several draft noise related planning conditions for the site. The conditions include an hours restriction on vehicle movement, loading/unloading and audible noise at the boundary of any residential accommodation outside of 08:00 – 20:00. A planning condition requiring noise from fixed plant and equipment on site achieving a rating level of 10 dB below the

background sound level at the nearest noise sensitive premises in accordance with BS4142:2014 was also proposed.

2.24 On 10 February 2017 a telephone call was made to Mr Thayer to discuss the methodology and criteria to be adopted for the assessment, but this was not possible. On 13 February 2017 an email was sent to Mr Thayer covering the assessment approach and welcoming comments. This was followed up on 15 February 2017 with a further e-mail. No comments were forthcoming.

2.25 Of concern is the proposed rating level limit, which is a very stringent design limit. BS4142 Section 11 states

> *"The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

2.26 Designing to a rating level equal to background would indicate a low impact, and it is therefore considered that this as a limit is putting unreasonable constraint on the site. It is assumed that, given no further comments have been received, that the proposed methodology and criteria are accepted.

2.27 In summary, the assessment comprises the following:

- The setting of appropriate daytime and night-time plant limits to be achieved at the nearest noise sensitive receptors in terms of a rating level as per BS4142:2014;
- Assess the potential impact of operational noise at the Site based on library data for such activities against BS4142:2014; and
- High level assessment on the noise impact from additional vehicles on the key local road links using the principles of DMRB.

2.28 An assessment of the noise associated with HGVs arriving and departing on site against internal and external noise limits set out in BS8233:2014 and an appropriate L_{AFmax} night-time criterion had originally been proposed. However, given that the access and egress to the site lies on the southern boundary, far removed from the nearest noise sensitive receptors, and that the structures on site will likely provide significant acoustic screening, no further consideration has been given to this aspect of the site operations. HGVs arriving and departing have instead been included in the BS4142:2014 operational noise assessment.

3.0 Noise Monitoring

Summary

3.1 To inform the assessment, a detailed baseline noise survey was undertaken on the Proposed Development. This survey was undertaken to determine the current prevailing noise climate at the nearest noise sensitive receptors to the proposed scheme.

3.2 This survey was conducted between approximately 13:30 hours on Thursday 16th February and 12:30 hours on Friday 17th February 2017.

Measurement Locations

3.3 A measurement location was selected for the baseline noise survey at the location representative of the identified nearest noise sensitive receptors, as shown in **Appendix 3** and described below.

- **Measurement Location 1**, along the northern boundary of the site, approximately 28m to the south of the nearest rail line.

3.4 The measurement location was used to collect long-term, unmanned measurement data representative of the existing noise climate at receptors to the north of the rail line over continuous periods of the daytime, evening and night-time. All measurements were subject to free-field conditions.

3.5 It was observed during installation and recovery of the equipment that, during the daytime, the main source of noise in the area was rail traffic including a mix of passenger trains every few minutes and occasional freight train pass bys noted. It was also noted that a freight train was being held at the measurement location for a short period during the collection of the equipment. In addition there were regular vehicle movements on the business park roads and the background noise level was perceived to be dominated by distant road traffic noise. There was negligible noise noted from the surrounding existing businesses.

3.6 During a visit to the nearest existing dwellings on New Road it was noted that the noise climate was dominated by road traffic on New Road. There are several shop units with associated fixed plant on New Road and this was audible at times from the measurement location.

Meteorological conditions

3.7 Over the course of the baseline noise survey, meteorological conditions remained conducive to environmental noise measurement, remaining dry and winds ranging from still conditions to a light breeze.

Measurement Equipment

3.8 The noise survey was carried out using the type 1 specification noise measurement equipment detailed in **Table 3.1** below.

Table 3.1 - Noise measurement equipment

Equipment	Make and model	Serial number
Sound Level Meter	01dB DUO	10129
Calibrator	01dB-Stell Cal21	34323957

3.9 The meter had been calibrated to traceable standards within the preceding two years and the calibrator within the preceding 12 months. The noise meter was calibrated both prior to and upon completion of the survey and no significant drift was noted.

Measurement results

3.10 **Table 3.2** below presents a summary of the measured noise levels obtained at Measurement Location 1 during the baseline noise survey:

Table 3.2 - Summary of measured noise levels at measurement location 1, Façade level (dB(A))

Period	Sample period	$L_{Aeq,T}$	$L_{A90,T}$	Typical[1] L_{AFmax}
Daytime (07:00 – 23:00)	16-hour[2]	60.9	47.7	-
	1-hour range	58.9 – 62.6	45.0 – 51.6	-
Night-time (23:00 – 07:00)	8-hour	58.1	41.9	81.0
	15-minute range	42.7 – 63.1	40.1 – 48.7	-

[1] The typical L_{AFmax} has been defined by the 10th highest maximum 1-second noise level associated with discrete events.

[2] Data collected over a 14-hour period is considered representative of the full 16-hour period.

3.11 A table presenting a detailed breakdown of the measured noise levels is given in **Appendix 3**.

4.0 ASSESSMENT

Noise from fixed plant

4.1 It is anticipated that there may be fixed plant and equipment associated with the Proposed Development that have the potential to generate noise. At this stage of the development, details of the proposed type, number and precise location of any such plant or the nature of its operation are not available. In the absence of detailed information, it is appropriate to specify suitable noise control limits to which any plant should conform. These limits should include any appropriate corrections for acoustic characteristics.

4.2 It is considered appropriate that the cumulative effect of all external plant to be incorporated in the proposals and operating at worst case duty, should be specified so that it does not exceed a rating over background level of 0 dB at the closest noise sensitive receptors during both the daytime and night-time periods.

4.3 For existing noise sensitive receptors located near to the northern boundary of the Site, the noise measurements from Measurement Location 1 are considered to be representative of the existing noise climate in these areas.

4.4 BS 4142 advises that the measurement time interval for background noise measurements should be 'should be sufficient to obtain a representative or typical value of the background sound level'.

4.5 Consideration has been given to the appropriate background sound levels, and based on the selected values, the combined noise level from all plant associated with the development should be designed to meet the rating noise limits presented in **Table 4.1**.

Table 4.1 – Determination of background sound levels and rating level limits, free-field (dB(A))

	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
Minimum	45 $L_{A90,1hr}$	40 $L_{A90,15min}$
Maximum	52 $L_{A90,1hr}$	49 $L_{A90,15min}$
Linear average	49 $L_{A90,1hr}$	43 $L_{A90,15min}$
Most common	50 $L_{A90,1hr}$	41 $L_{A90,15min}$
Period $L_{A90,T}$	48 $L_{A90,16hr}$	48 $L_{A90,8hr}$
Selected background sound level	**48 $L_{A90,T}$**	**41 $L_{A90,T}$**
Adopted rating level limits (= background sound level +0dB)	**48 $L_{Ar,Tr}$**	**41 $L_{Ar,Tr}$**

4.6 The above rating level limits apply at least 3.5 metres from the façade of any residential property i.e. in free-field conditions.

4.7 In accordance with BS 4142, assessments of plant noise emissions should include appropriate rating corrections for tonal, irregular or intermittent plant where applicable, before comparison with the above limits.

4.8 During the detailed design stage, noise from any fixed plant can be considered to ensure that the above limits can be met.

4.9 It should be noted that a noise emission limit specified within **Table 4.1** would be applicable to the total noise from the simultaneous operation of all external plant serving the proposed development. As such, noise emissions from individual items of plant will need to be lower than the given limit, although the exact limit for each individual item of plant will be dependent upon its type, noise characteristics, location etc. This issue is best addressed during the detailed design stage.

Noise from site operations

4.10 On 17th February BWB visited the existing Curran Road waste transfer station between approximately 09:15 and 10:30 to observe current practices and to collect data on the various sources of noise.

4.11 Due to the hazardous nature of the environment, there were restrictions on where equipment could be used, and although efforts were made to undertake noise measurements from the office building on site, much of the data is of limited use. However, the visit allowed the following observations to be made:

(i) An on-site radio was the main source of noise in the environment. There were no other continuous sources of noise.
(ii) There is a drum crusher in one of the storage bays – this is used for 20 to 30 minutes per week at most. Subjectively, there was minimal noise associated with it and therefore no further consideration has been given to its noise impact at this stage.
(iii) Reciprocal saws are used in the yard to strip parts when necessary – they are used for approximately 30 minutes per week.
(iv) Skip wagons visit the site to load/unload skips – the process takes around 10 minutes and the site typically receives 1 to 2 per week.
(v) There are typically 2 to 3 deliveries per day, with 4 to 5 deliveries on a busy day.
(vi) During each delivery, forklifts are operating continuously in the area.
(vii) Each delivery lasts approximately 25 minutes.

4.12 Activities associated with the loading and unloading of vehicles on site, skip vehicles and usage of reciprocal saws have been assessed in accordance with BS 4142. In doing so, the rating level limits identified for fixed plant should also be used for such activities.

4.13 From the current site plan, loading bays are shown to the south east of the northern bays, and it is assumed that reciprocal saw use would be limited to areas immediately in front of bays. It is therefore assumed that the bays will be of a suitable acoustic integrity so as to provide effective acoustic screening to the nearest noise sensitive receptors from loading and cutting activities.

4.14 The site plan shows the skip area in the south western corner of the site, away from the existing dwellings north of the site. Although the buildings on the adjacent site to the west and the new bays in the north of the site, there may be just be a direct line of sight

through to the skip area for a limited number of dwellings. For the purposes of this assessment, it has been assumed the skip area would not be acoustically screened from the dwellings.

4.15 A summary of the source noise data utilised in the operational noise assessment are presented in **Table 4.2** below.

Table 4.2 – Adopted noise emission data for noise sources associated with known operations, dB(A)

Noise Source	Distance	$L_{Aeq,T}$	L_{AFmax}	Typical duration
HGV loading/unloading including forklift truck movements[1]	5 metres	60.5	85.4	23 minutes
Skip delivery / removal[2]	10 metres	72.3	79.9	10 minutes
Reciprocal saw use[3]	10 metres	79.0	-	5 minutes[5]

[1] From observations on the Curran Road site

[2] library data from previous sites

[3] Data taken from BS5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*, Table C4 ref no. 72 "hand-held circular saw (petrol cutting concrete blocks)2

4.16 The assessment has been based on the following assumptions:

- During a typical 1-hour daytime period there will be 2 HGV deliveries, 1 skip delivery and 5 minutes of reciprocal saw use;
- During a typical 15-minute night-time period there will be 1 HGV delivery, 1 skip delivery and 5 minutes of reciprocal saw use;
- Sources are effectively 1.5 metres above ground and treated as point sources; and
- Hard ground (G=0) has been assumed.

4.17 Based on the above information, the daytime 1-hour and night-time 15-minute predicted specific noise levels have been calculated at the nearest noise sensitive receptor off New Road, taking into account distance attenuation from a point source in the centre of the site for cutting and loading, and from the centre of the skip area for skip delivery noise only (i.e. not accounting for any ground absorption or air absorption). The specific noise levels have then been assessed in accordance with BS 4142.

Table 4.3 – BS 4142 assessment of operational noise – daytime 1-hour

Description	Noise Level (dB(A))	Relevant BS4142 clause	Commentary
Specific sound level	45 dB $L_{Aeq,1hour}$	7.3.5	Takes into account 10 dB of acoustic screening provided by the bays for HGV loading and reciprocal saw use
Acoustic feature correction	+3dB	9.2	+3 dB for impulsivity which is just perceptible at the noise receptor
Rating level	48 dB $L_{Ar,1hour}$	9.2	-
Background sound level	48 dB $L_{A90,1hour}$	8	Representative background noise level measured at Baseline survey position
Excess of rating over background level	0 dB	11	-
Assessment indicates a low probability of adverse impact			

Table 4.4 – BS 4142 assessment of operational noise – night-time 15-minute

Description	Noise Level (dB(A))	Relevant BS4142 clause	Commentary
Specific sound level	53 dB $L_{Aeq,15min}$	7.3.5	Takes into account 10 dB of acoustic screening provided by the bays for HGV loading and reciprocal saw use
Acoustic feature correction	+3dB	9.2	+3 dB for impulsivity just perceptible at the noise receptor
Rating level	56 dB $L_{Ar,15min}$	9.2	-
Background sound level	41 dB $L_{A90,15min}$	8	Representative background noise level measured at Baseline survey position
Excess of rating over background level	+15 dB	11	-
Assessment indicates a significant adverse impact, depending on the context			

4.18 The daytime assessment has shown that noise associated with operations is at the rating level limit of 0 dB above background. However, during the night-time the assessment has indicated that the rating level from activities will be +15 dB above the criterion of

0 dB above background, accounting for acoustic screening provided by the bays on the northern side of the site.

4.19 Given the night-time result, consideration has been given to appropriate mitigation measures in Section 5 of this report.

Development generated road traffic noise

4.20 As there is the potential for local noise-sensitive receptors to be affected by noise generated from additional road traffic movements along the local road network, a high-level assessment has been carried out based on traffic assessment data provided by the project traffic consultant.

4.21 The existing 24-hour traffic counts along Lamby Way show 6,719 movements to the west of the site and 6,090 movements to the east of the site. The area is predominantly employment/industrial use and so likely to have a high percentage of HGV movements.

4.22 It is understood that there will be a total of 52 movements associated with the Proposed Development. This equates to an increase in traffic of less than 1% on the lighter trafficked of the two links. Given that broadly a 25% increase in traffic would result in a 1dB increase in noise, it is considered that the development generated road traffic noise impact from this development will be negligible.

4.23 Furthermore, it is understood there are no existing residential receptors on Lamby Way and that movements associated with the Proposed Development will disperse across the wider network, thus resulting in even lower impacts on other road links in the area.

4.24 It is considered that there will therefore be no significant impact on local residents from development generated road traffic noise based on this assessment and no further consideration of mitigation is needed.

5.0 MITIGATION

5.1 Given the results of the night-time assessment of operational noise, consideration has been given to possible mitigation measures to mitigate noise to an acceptable level.

5.2 During the night-time the highest ranked noise source over a 15-minute period is the skip delivery, followed by use of the reciprocal saw. The HGV delivery is the quietest source of the three. Given the acoustic screening already taken into account for reciprocal saw use, opportunities for further noise reduction are limited. Furthermore, even if noise from the skip delivery was screened acoustically so as to provide 10 dB of sound reduction at the nearest dwelling, the BS4142 assessment would still indicate a significant adverse impact.

5.3 Should it be required that the night-time rating level limit of +0 dB above background be achieved, normal skip deliveries (excluding emergency situations) could be restricted to daytime hours of 07:00 – 23:00 only, and that reciprocal saw use is also restricted to these times only.

5.4 With these noise sources restricted during the night-time period, the resultant rating level at the nearest noise sensitive receptor from HGV deliveries, including loading and unloading, would be 29 dB, which would be 12 dB below the background sound level, indicating a low probability of adverse impact. Therefore, HGV deliveries should be able to operate without restriction.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 BWB Consulting has been appointed by Vastint Cardiff BV to undertake an environmental noise assessment for a proposed waste transfer station on Lamby Way in Rumney, Cardiff.

6.2 This assessment has been undertaken based on the results of a weekday daytime and night-time baseline noise survey. The results of the survey have been assessed in accordance with current guidance, and in line with an assessment methodology submitted to CCC.

6.3 The noise assessment has covered the noise impact from development generated road traffic noise, which was identified to be negligible.

6.4 Noise from operational activities on site onto nearby noise sensitive receptors has also been assessed. During the daytime, the noise has been predicted to meet the adopted criterion. During the night-time, the assessment has indicated a significant adverse impact. With night-time skip deliveries/removal and usage of reciprocal saws restricted, the adopted criterion can be met and a low impact would be indicated.

6.5 Appropriate design limits for noise from fixed plant to achieve have also been set.

6.6 Based on the results of the assessment, with appropriate mitigation measures in place, it is considered that noise need not be a determining factor in the granting of detailed planning permission for the proposed scheme.

APPENDIX 1

Glossary of terms

Appendix 1 – Glossary of Acoustic Terminology

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

Sound Level	Location
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 4 0dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a car
60 to 70 dB(A)	Typical high street
70 to 90 dB(A)	Inside factory
100 to 110 dB(A)	Burglar alarm at 1m away
110 to 130 dB(A)	Jet aircraft on take off
140 dB(A)	Threshold of pain

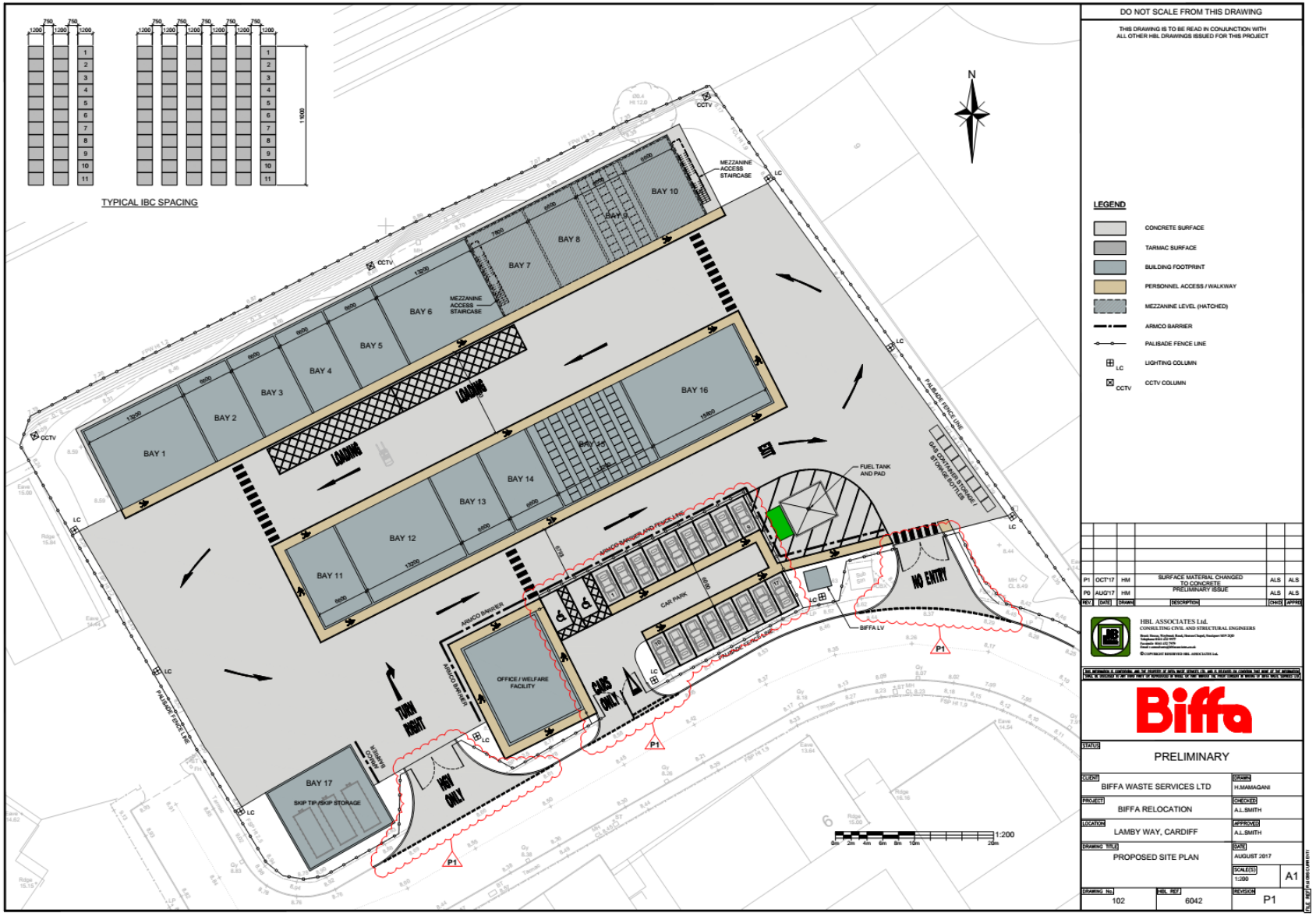
Acoustic Terminology

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building façade.

APPENDIX 2

Indicative Site Layout

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS



DO NOT SCALE FROM THIS DRAWING

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT

LEGEND

- CONCRETE SURFACE
- TARMAC SURFACE
- BUILDING FOOTPRINT
- PERSONNEL ACCESS / WALKWAY
- MEZZANINE LEVEL (HATCHED)
- ARMCO BARRIER
- PALISADE FENCE LINE
- LC — LIGHTING COLUMN
- CCTV — CCTV COLUMN

REV	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
P1	OCT'17	HM	SURFACE MATERIAL CHANGED TO CONCRETE	ALS	ALS
P0	AUG'17	HM	PRELIMINARY ISSUE	ALS	ALS

HBL ASSOCIATES Ltd.
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Biffa

STATUS: PRELIMINARY

CLIENT: BIFFA WASTE SERVICES LTD	DRAWN: H.MAMAGANI
PROJECT: BIFFA RELOCATION	CHECKED: A.L.SMITH
LOCATION: LAMBY WAY, CARDIFF	APPROVED: A.L.SMITH
DRAWING TITLE: PROPOSED SITE PLAN	DATE: AUGUST 2017
	SCALE(S): 1:200 A1
DRAWING No: 102	HBL REF: 6042
	REVISION: P1

APPENDIX 3

Noise measurement location and results

Appendix 3

Figure A3.1 Measurement Location

Table A3.1 – Noise Monitoring results – tabulated

Period start	Period	$L_{Aeq,T}$	$L_{A90,T}$
16/02/2017 14:00	1-hour	60.1	51.6
16/02/2017 15:00	1-hour	62.4	51.2
16/02/2017 16:00	1-hour	62.1	51.0
16/02/2017 17:00	1-hour	62.6	50.3
16/02/2017 18:00	1-hour	61.0	50.3
16/02/2017 19:00	1-hour	60.2	49.3
16/02/2017 20:00	1-hour	60.6	48.1
16/02/2017 21:00	1-hour	58.9	45.9
16/02/2017 22:00	1-hour	59.0	45.0
16/02/2017 23:00	15 min	53.5	44.1
16/02/2017 23:15	15 min	54.5	43.4
16/02/2017 23:30	15 min	58.9	43.4
16/02/2017 23:45	15 min	58.0	43.6
17/02/2017 00:00	15 min	59.5	43.2
17/02/2017 00:15	15 min	61.3	42.6
17/02/2017 00:30	15 min	58.4	42.0
17/02/2017 00:45	15 min	55.6	41.2
17/02/2017 01:00	15 min	44.0	41.4
17/02/2017 01:15	15 min	59.0	41.7
17/02/2017 01:30	15 min	42.7	40.9
17/02/2017 01:45	15 min	58.3	41.1
17/02/2017 02:00	15 min	42.8	40.7
17/02/2017 02:15	15 min	56.4	42.0
17/02/2017 02:30	15 min	59.5	41.0
17/02/2017 02:45	15 min	62.5	40.1
17/02/2017 03:00	15 min	58.6	41.1
17/02/2017 03:15	15 min	58.4	42.5
17/02/2017 03:30	15 min	58.7	41.5
17/02/2017 03:45	15 min	58.6	41.3
17/02/2017 04:00	15 min	59.8	41.8
17/02/2017 04:15	15 min	44.0	42.0
17/02/2017 04:30	15 min	61.2	42.4
17/02/2017 04:45	15 min	45.4	43.3
17/02/2017 05:00	15 min	56.4	42.9
17/02/2017 05:15	15 min	57.3	43.7
17/02/2017 05:30	15 min	54.2	45.3
17/02/2017 05:45	15 min	48.0	46.4
17/02/2017 06:00	15 min	57.9	47.2
17/02/2017 06:15	15 min	60.9	48.4
17/02/2017 06:30	15 min	63.1	48.0
17/02/2017 06:45	15 min	53.9	48.7

Period start	Period	$L_{Aeq,T}$	$L_{A90,T}$
17/02/2017 07:00	1-hour	59.9	49.8
17/02/2017 08:00	1-hour	60.0	48.6
17/02/2017 09:00	1-hour	61.8	49.9
17/02/2017 10:00	1-hour	60.9	48.5

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