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ENVIRONMENT

Hargreaves Land Limited
Planning Appliation 1 at
Lincolnshire Lakes (North)
Scunthorpe

Noise Impact Assessment

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Noise Impact Assessment

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Notice

EXECUTIVE SUMMARY

BWB Consulting Ltd has been instructed by Hargreaves Land Limited ('the Client), to undertake a Noise Impact Assessment for a proposed residential-led mixed-use development ('the Proposed Development') for the site know as Planning Application 1 at Lincolnshire Lakes (North), Scunthorpe ('the Site').

A baseline noise survey was undertaken at the Site in November 2024 and the results of the survey, and subsequent assessment work, have been assessed in accordance with current standards and guidance.

An assessment of noise at the Site determined that suitable external and internal noise levels can be achieved at the worst affected residential development parcels, without the need for additional mitigation.

Appropriate noise limits have been determined to be achieved by fixed plant items associated with the Proposed Development.

As such, noise need not be a determining factor in granting planning consent for the Proposed Development.

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1. INTRODUCTION

Appointment and Background

1.1 BWB Consulting Ltd ('BWB') has been instructed by Hargreaves Land Limited ('the Client') to undertake a noise impact assessment for a proposed residential-led mixed-use development ('the Proposed Development') for the site know as Planning Application 1 at Lincolnshire Lakes (North), Scunthorpe ('the Site').

1.2 The assessment has been undertaken with due consideration to relevant British Standards and draws on the results of a baseline noise survey undertaken on the Site.

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

Site Setting and Proposed Development

1.4 The Site is located to the east of the M181/A1077(M) in Scunthorpe, and currently comprises open fields.

1.5 The Proposed Development comprises a hybrid planning application. The full elements relate to the construction of a new vehicular access off the M181/A1077(M) roundabout, a pedestrian and cycle link to Scotter Road, a foul pumping station, earthworks and 'off-plot' drainage, ecological and associated landscaping and infrastructure works.

1.6 The outline elements, with all matters reserved, relate to the development of up to 550 residential dwellings (Use Class C3), a local centre (Use Class E) and associated 'on-plot' landscaping, drainage and other infrastructure works." The Site location is shown in **Figure 1.1**, the residential parcels are shown in yellow, and the local centre is shown in blue.

Figure 1.1: Site location and development parcels

2. STANDARDS AND GUIDANCE

National Planning Policy Framework (NPFF) (2024)

2.1 Published in December 2024, this document sets out the Government's planning policies for England and supersedes the previous NPPF published in 2021. It makes the following reference to noise in the section entitled Conserving and enhancing the natural environment:

"187. Planning policies and decisions should contribute to and enhance the natural and local environment by:

[…]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

2.2 It also makes the following references to noise in the Section entitled *Ground conditions and pollution*:

"198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life72;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

[72] See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)."

BS 8233:2014: Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233)

2.3 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.

2.4 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 guideline values set out in **Table 2.1**, as detailed in Section 7.7.2 of the standard.

Table 2.1: Indoor ambient noise levels for dwellings from 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 $L_{Aeq,\ 8\ Hour}$

2.5 BS 8233 does not provide specific criteria for suitable impulsive, one-off noise events (L_{AFmax}), however, it is common practice to adopt 45 dB L_{AFmax} as a criterion for typical events at night, based on the guidance from the World Health Organisation (WHO) *Guideline for Community Noise* 1999 and *Environmental Noise Guidelines for the European Region* 2018. Therefore, this criterion has been adopted for this assessment.

2.6 With respect to external amenity space such as gardens and patios, BS 8233 states 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 a higher external noise criterion may be appropriate in certain environments such as urban areas, or 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.

BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound

2.7 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.

2.8 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.

2.9 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.

2.10 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.

2.11 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."*

3. BASELINE NOISE SURVEY

Introduction

3.1 A baseline noise survey has been undertaken to determine the prevailing noise climate at the Site. A summary of the baseline noise survey methodology and relevant results is included, below.

Measurement Locations

3.2 Measurements were undertaken at the measurement location shown in **Figure 3.1**.

Figure 3.1: Noise survey measurement location

Measurement Location 1 (ML1)

3.3 Noise measurements were undertaken at ML1 over a 24-hour period commencing at 15:45 on 6th November 2024. The equipment was installed at the western boundary of the closest residential parcel to the A1077M. The location was adopted to be

representative of the worst affected residential dwellings by road traffic on the development site.

3.4 The equipment at ML1 was installed in free-field conditions at a height of 1.5 m above local ground level.

Measurement Equipment

3.5 The baseline noise survey was undertaken using the Class 1 specification noise measurement equipment detailed in **Table 3.1**. The equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed. The sound level meter, pre-amplifier and microphone were calibrated to traceable standards within the 24 months prior to the measurements. The portable calibrator was calibrated within the 12 months preceding the date of the survey.

Table 3.1: Noise measurement equipment

Position	Equipment	Make and Model	Serial Number
ML1	Sound Level Meter	Svantek 971	60745
	Microphone	Aco Pacific 7052E	66815
	Preamp	SV18	64535
	Calibrator	Svantek SV33A	90275

Weather Conditions

3.6 The weather was generally conducive to noise measurement, it being dry with low wind speeds (<5 ms^{-1}).

Observations

3.7 Subjectively, the noise environment was dominated by the M181/A1077(M) to the west of the Site.

Measurement Results

3.8 A summary of the measured noise levels is included in **Table 3.2**.

Table 3.2: Summary of measured sound pressure levels at ML1

Period	Start Time and Date	dB $L_{Aeq,T}$	dB $L_{A90,T}$[2]	dB L_{AFmax}[3]
Daytime[1]	06/11/2024 15:45	50	46	-
Night-time	06/11/2024 23:00	45	35	57

[1] Logarithmic average of L_{Aeq} noise levels between 15:45 – 23:00 on 6/11/2024 and between 07:00 – 15:45 on 6/11/2024

[2] Typical backgrounds taken to be the mean of $L_{A90,15min}$ values during the assessment period.

[3] 10th highest of the $L_{AFmax,\ 5min}$ values during the night-time period

4. ASSESSMENT

4.1 Review of Strategic noise maps produced by DEFRA indicate that the Site lies outside of the 55dB $L_{Aeq,16h}$ noise contour for the daytime, and 50dB $L_{Aeq,8h}$ for the night-time. Therefore, this source has not been considered further within this assessment.

External Noise Levels

4.2 It can be seen from **Table 3.2** that the daytime noise level at ML1 was 50 dB $L_{Aeq,16h}$. ML1 was representative of the worst affected area of the closest residential development parcel to the M181/A1077(M). Therefore, noise levels at the worst affected dwellings would be expected to be 50 dB $L_{Aeq,16h}$.

4.3 In accordance with BS 8233 external noise levels of 50 dB $L_{Aeq,16h}$ are desirable and therefore the noise levels at the worst affected dwellings are expected to be desirable without accounting for any additional mitigation measures.

4.4 Given the above, further consideration of mitigation measures for external amenity spaces is unwarranted.

Internal Noise Levels

4.5 Internal noise levels can be estimated from free-field external noise levels by applying a -15 dB correction, assuming the façade contains a partially open window for ventilation.

4.6 Applying this correction to the measured noise levels at ML1, as detailed in **Table 3.2**, results in the predicted internal noise levels in **Table 4.1** below.

Table 4.1: Predicted internal noise levels at worst affected dwellings with partially open windows

Period	dB $L_{Aeq,T}$	dB L_{AFmax}
Daytime (07:00 – 23:00)	35	-
Night-time (23:00 – 07:00)	30	42

4.7 It can be seen from **Table 4.1** that the predicted internal noise levels achieve the internal desirable guideline values from BS 8233, as detailed in **Table 2.1**, with partially open windows. Typical night-time L_{AFmax} noise levels also achieve the 45 dB criterion from the WHO guidelines.

4.8 Given the above, further consideration of mitigation measures for internal habitable spaces is unwarranted.

Noise from Fixed Plant Items

4.9 It is anticipated that there may be fixed plant and equipment associated with the Proposed Development which have the potential to generate noise. This includes a foul pumping station. However, at this stage, the exact details of the proposed plant and noise sources are not available. In the absence of detailed information, it is appropriate to specify suitable noise level limits to which any proposed noise sources should conform. These limits should include any appropriate corrections for acoustic characteristics.

4.10 It is considered appropriate that the cumulative effect of all external plant should be controlled so that the rating level is less than or equal to the prevailing background noise levels from **Table 3.2**, namely:

- A rating level limit of 46 dB during the daytime; and
- A rating level limit of 35 dB during the night-time.

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

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

4.13 It should be noted that the derived rating level limits would be applicable to the total noise from the simultaneous operation of all external plant. 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.

5. CONCLUSION

5.1 BWB has been instructed by Hargreaves Land to undertake a Noise Impact Assessment for a proposed residential-led mixed-use development for Planning Application 1 at Lincolnshire Lakes (North), Scunthorpe.

5.2 A baseline noise survey was undertaken at the Site in November 2024 and the results of the survey, and subsequent assessment work, have been assessed in accordance with current standards and guidance.

5.3 An assessment of noise at the Site determined that suitable external and internal noise levels can be achieved at the worst affected residential development parcels, without the need for additional mitigation.

5.4 Appropriate noise limits have been determined to be achieved by fixed plant items associated with the Proposed Development.

5.5 As such, noise need not be a determining factor in granting planning consent for the Proposed Development.

APPENDICES

APPENDIX A: Glossary of Terms

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 L_{Aeq}, L_{A90} 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.

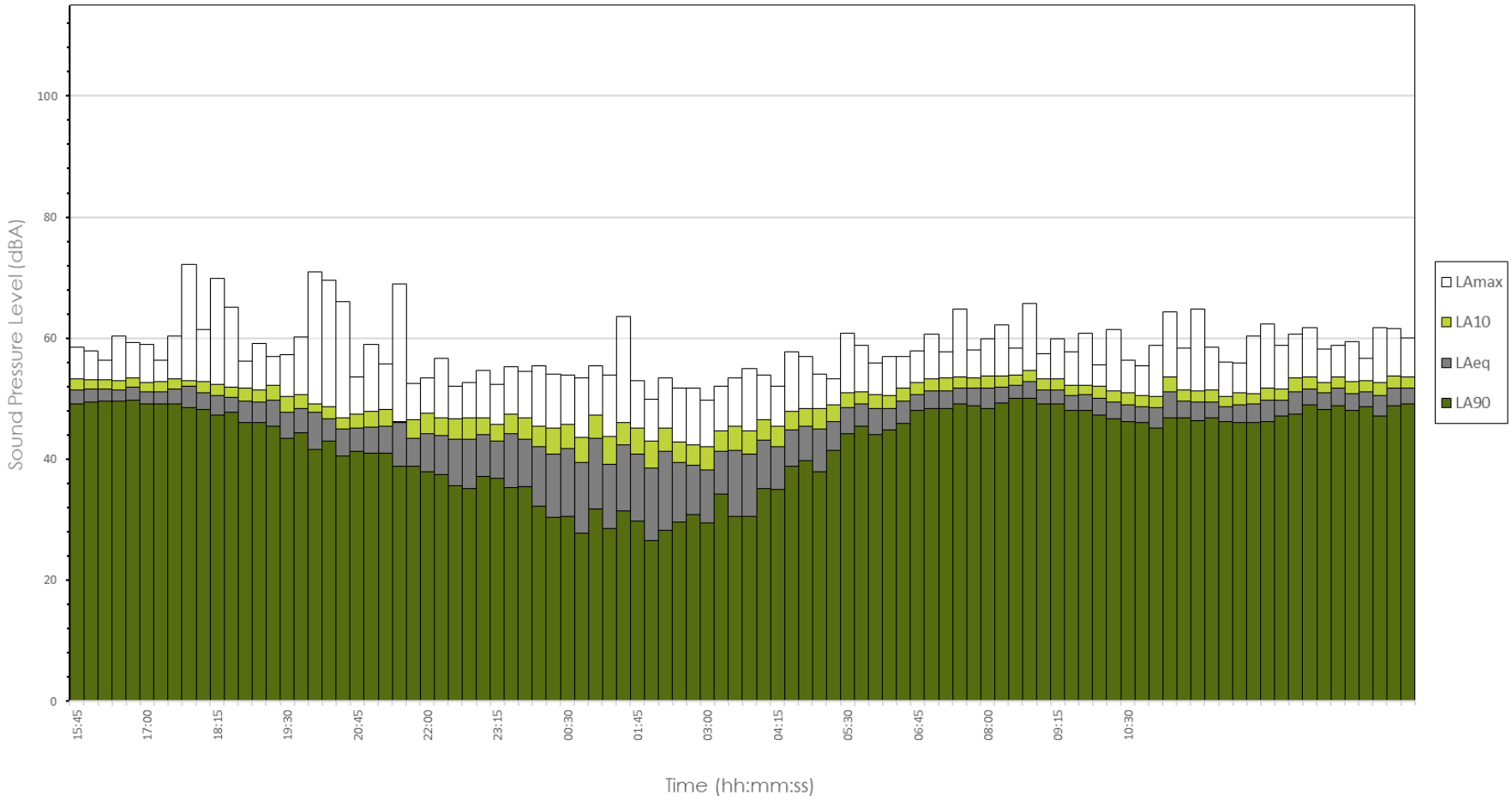
Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5Pa).
dB(A)	A-weighted decibel. This is a measure of the overall 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 B: Baseline Noise Data

BWB

Lincolnshire Lakes

Measurement Location 1 - Time History Graph
6th to 7th November 2024



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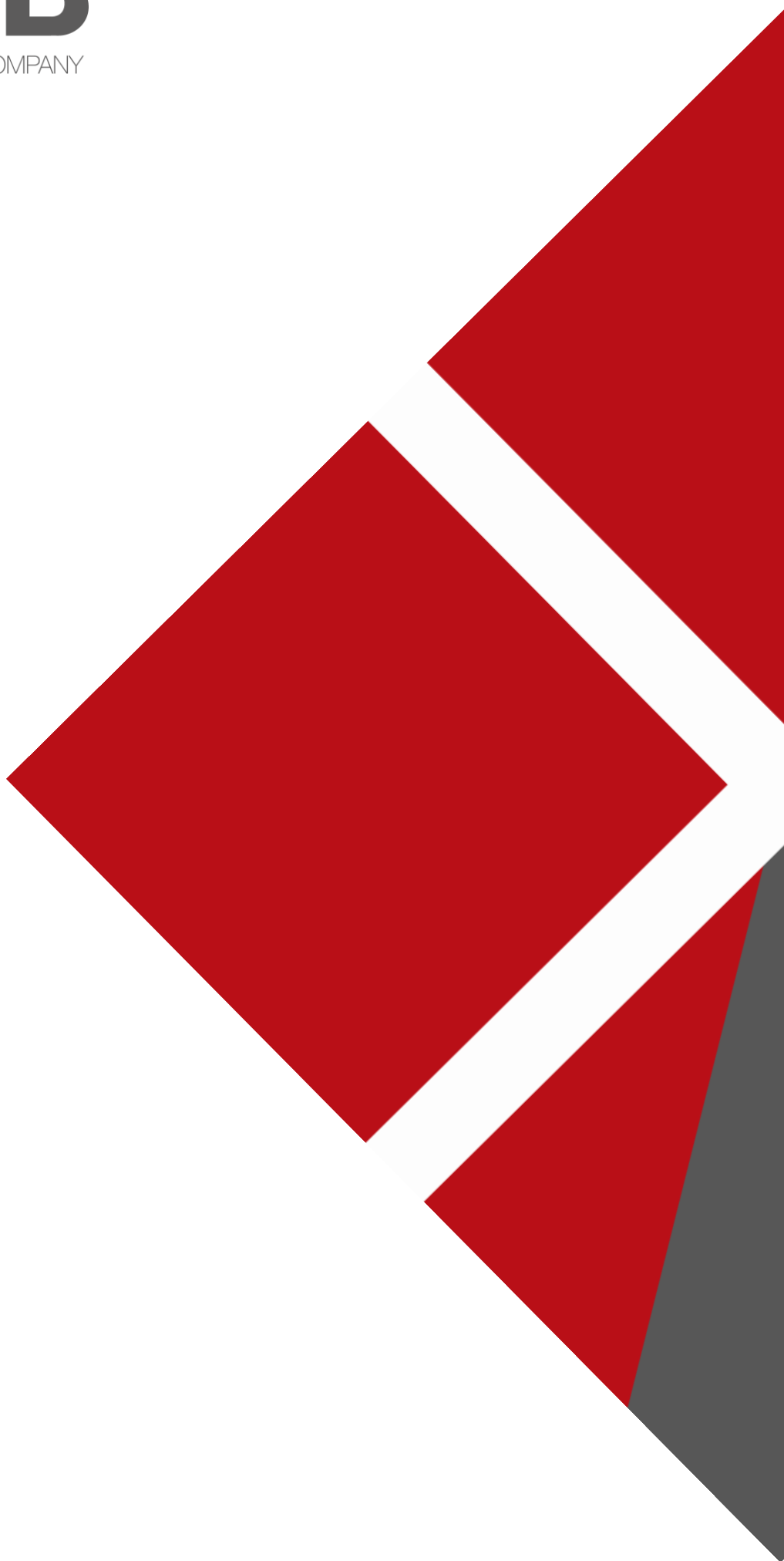

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