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Biomass Boiler Acoustic Statement – Plas Farm

Project: Installation of a 149 kW Hargassner Eco-HK biomass boiler (containerised wood-clad unit with twin input stoker augers)

Nearest noise-sensitive receptor: Holiday cottage – approximately 15 m from containerised plant

Prepared by: Adam Cropper of Elements Energy Ltd.

Date: October 2025

1. Introduction

This statement supports the planning application for a containerised biomass boiler installation at Plas Farm, Cilybebyll, Pontardawe, Swansea, SA8 3JQ. The system forms part of the estate's wider renewable-energy and decarbonisation strategy, serving existing tourism accommodation.

2. Description of Installation

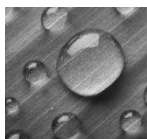
- Plant: Hargassner Eco-HK 150 (149 kW) wood-chip boiler with twin stoker augers and induced-draught fan.
- Housing: Standard containerised plant room, internally insulated and externally finished in timber cladding to complement surrounding buildings.
- Ancillaries: Chip store with twin screw feed, automated ash and heat-exchanger cleaning system, insulated flue.
- Operating pattern: Automatic modulation. While the boiler will run mainly during the day (07:00 – 22:00), it may operate intermittently at night during cold weather to maintain heating demand.

3. Manufacturer Noise Data

Hargassner's published acoustic specification for the Eco-HK 130–170 range states:

Noise emission (normal operation): 57 dB(A) — measured as airborne sound pressure within the boiler room (LpA).

This format of noise declaration is standard for domestic and light-commercial biomass systems, where internal sound-pressure levels are used to demonstrate compliance with



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indoor comfort and equipment standards. No external sound-power level (L_w) data are provided or typically required for this product class.

For assessment purposes, the published **57 dB(A)** internal value has therefore been adopted as a **conservative external equivalent at 1 m** from the boiler casing.

4. Predicted Noise Levels

Table 1 – Predicted noise levels at nearest receptor (15 m):

Parameter	Basis / Calculation	Value
Assumed source level	Manufacturer internal L_pA (conservative external equivalent)	57 dB(A)
Spherical spreading (15 m): $20 \cdot \log_{10}(15)$	Free-field divergence	-23.5 dB
Container & timber-cladding loss	Insulated steel container + timber exterior (conservative)	-20 dB
Predicted level at receptor (L_{Aeq})	$57 - 23.5 - 20$	≈ 34 dB(A)

Assumptions:

- Continuous full-load operation
- No credit for ground or air absorption
- No screening from intervening structures

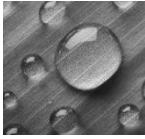
Actual external levels are expected to be marginally lower during typical modulating operation.

5. Acoustic Character & Operation

The Hargassner Eco-HK operates with steady-state combustion and fan speed modulation via its control system.

No prominent tonal, impulsive, or intermittent characteristics are expected from normal combustion.

Brief auger-feed and ash-cleaning cycles occur intermittently (typically 2 – 3 times per day) but are not expected to be perceptible at 15 m distance given the container construction and automatic sequencing.



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BS 4142 character correction: +0 dB (no distinguishable tonal, impulsive, or readily distinctive intermittent content anticipated).

6. Flue and Ancillary Noise

The flue discharge velocity is low (natural draught assisted by induced-draught fan) with negligible breakout noise. No significant tonal or aerodynamic features are anticipated.

Cumulative noise from existing site services (e.g. domestic heating, ventilation systems) is minimal. The combined LAeq from the biomass boiler and existing plant is expected to remain below 35 dB(A) at the nearest receptor façade.

7. Background Sound Environment

A baseline noise survey was undertaken at Plas Farm in July 2024 by Aether Acoustics Ltd (Report Ref. AE083, prepared by Stratton Barrett MIOA) in connection with a hydroelectric planning application on the same estate.

The survey measured background sound levels at two locations using calibrated Type 1 instrumentation:

Plas Farm holiday accommodation (Location L1, 80 m from surveyed plant location):

LA90,15min = **43 dB(A)** (daytime and night-time)

Plas Cilybebyll gardens (Location L2, 200 m):

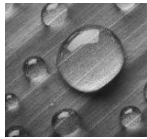
LA90,15min = **36–37 dB(A)** (daytime and night-time)

The noise climate was dominated by the River Clydach, which runs through the property, and was generally constant across day and night periods with minimal variation between measurement periods.

The proposed biomass boiler container is located approximately **50 m from measurement point L1**, within the same river-influenced acoustic environment surveyed by Aether Acoustics.

For this assessment, the measured background of 43 dB(A) LA90 is adopted as representative of conditions at the nearest holiday cottage receptor.

The full Aether Acoustics baseline survey (Report AE083, August 2024) is available on request and is held by the applicant.



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7.1 Compliance with BS 4142:2014 +A1:2019

Predicted specific level at receptor	34 dB(A) LAeq
Acoustic character correction	+0 dB (steady-state, no distinctive features)
Rating level (L _{Ar} ,Tr)	34 dB(A)
Measured background (LA ₉₀)	43 dB(A)
Difference (rating – background)	-9 dB
BS 4142 assessment	Low impact

The rating level is **9 dB below the measured background sound level**, indicating a **low impact** in accordance with BS 4142:2014 +A1:2019.

The proposal therefore complies with:

- BS 4142:2014 +A1:2019 – Methods for rating and assessing industrial and commercial sound
- TAN 11 (Noise) – Welsh Government Technical Advice Note
- Planning Policy Wales (Edition 12) – sustainable development & renewable energy policy
- Neath Port Talbot LDP Policy EN8 – Pollution and Land Stability

8. Mitigation and Good Practice

- Keep container doors closed during operation.
- Fit acoustic louvres or attenuators to any permanent ventilation openings.

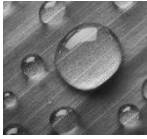
9. Conclusion

Using conservative assumptions and manufacturer data, the proposed 149 kW Hargassner Eco-HK containerised boiler is predicted to generate approximately **34 dB(A) LAeq at the nearest holiday cottage (15 m)**.

This is **9 dB below the measured background sound level of 43 dB(A) LA₉₀** recorded at Plas Farm in July 2024 by Aether Acoustics (Report AE083, Stratton Barrett MIOA).

The plant exhibits:

- No significant tonal or impulsive characteristics
- Steady-state combustion with automatic modulation



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- Substantial acoustic attenuation via containerised construction

The installation represents a **low acoustic impact** in accordance with:

- BS 4142:2014 +A1:2019
- TAN 11 (Welsh Government guidance on noise)
- Planning Policy Wales (Edition 12)
- Neath Port Talbot LDP Policy EN8

The proposal therefore meets the relevant planning and environmental-health criteria for renewable-energy developments in rural Wales.

Document prepared: October 2025

Baseline survey reference: Aether Acoustics Report AE083 (August 2024)

For: Plas Farm, Cilybebyll, Pontardawe, Neath Port Talbot SA8 3JQ