Email received 23/06/2025

Dear Rebekah

Thank you for your email I hope you found your visit useful

I am happy with the extension you proposal

I have included a response to the EHO below, if you could please pass on see **Response to EHO**

Also, following the recent feedback from Environmental Health you shared below, I wanted to share a suggested way forward that I hope will be seen as reasonable, proportionate, and reassuring for everyone involved.

Rather than commissioning a full acoustic report before installation, which in this case would actually cost more than the ASHP itself. My proposal is to proceed with the installation and then carry out a BS4142-compliant post-installation noise survey. This would be done once the system is fully up and running, and the assessment would be carried out by a fully qualified IOA-accredited acoustician. Making sure the 35dB level is achieved

This approach is consistent with what I outlined in the Design and Access Statement. Personally, I feel the best way to assess whether the installation meets the required standard is to test it under real world operating conditions when the system is in place and running as it will be in practice. I would be very happy for both you and Environmental Health to attend the testing if helpful. The post test report will also be shared in the same format as the previous testing report

I do understand the concerns raised and I want to be clear that my aim is not just to meet the requirements on paper, but to ensure that the ASHP performs as expected in the real world; and, importantly, that it doesn't lead to any future complaints or ongoing issues with neighbours. Getting it right the first time will avoid a situation where questions are raised later about whether it's too loud or causing a nuisance. That's something I'm keen to avoid entirely, which is why I'm committed to this post install testing as a sensible and transparent step.

The ASHP being proposed is significantly quieter than the previous one (by around 8–10 dB at 1 metre), and it uses a horizontal fan that directs sound away from the neighbouring property. It's also positioned behind an existing 2.2m high acoustic barrier, which previously achieved a measured 13–14 dB reduction with a vertical fan arrangement. The tonal issues that affected the previous unit also aren't expected with the new one, which has a much smoother, broadband sound profile. We achieved 39dB previously so taking the 8-10dB reduction so practically thinking we will more then achieve the 35dB threshold; 39 - 8 = 31dB

I'd aim to arrange the post-installation test within about say 30 days of installation, depending on the consultant's availability and access to the neighbour's garden. If the results were to show that any further steps are needed, I'd of course be happy to explore that in discussion with you and Environmental Health.

I hope this approach sounds fair and constructive. Please do let me know if you need anything else or would find another site visit useful at this stage.

Kind regards

Grant

Response to EHO

Dear Michael

Thank you for your comments on the proposed ASHP installation at 20 Hillside Avenue. I value the opportunity to clarify my position and ensure that all technical concerns are properly addressed. I also note that many of the points raised were already anticipated and responded to in the submitted Design and Access Statement (DAS) and Noise Impact Assessment (NIA). For ease I have added references where necessary.

1. Applicability of MCS020
EH Comment: "The proposed unit exceeds 1.5m³ so MCS020 does not apply."

Clarification:
The AES Hydro-Pro Z24/32 unit has a calculated volume of 0.643m³, under the 1.5m³ limit set in the March 2025 update to MCS020. This is confirmed in DAS Section 3.4, where I explain the technical compliance, even though permitted development does not apply due to the pool heating use and no MCS certification available. This is due to the expense of the certification and the lack of government grants for this type of ASHP making it unviable for the manufacturers to obtain the MCS Certificate.

2. 35 dB(A) Night-Time Façade Limit
EH Comment: "A design target of 35 dB(A) has been applied at the bedroom façade."

Clarification:
This value was fully adopted in Noise Impact Assessment and referenced in DAS 4.2.2 and 4.3.2. The facade in question is the back of the ground floor extension not the first floor bedroom. The predicted rating level at the most exposed façade is 29 dB(A) — 6 dB below the criterion — indicating a low likelihood of adverse impact under BS4142. This is based on the Barrier providing 20dB. However previously it had achieved 14dB. Please see attached report. So 35dB is more likely at the ground floor level then 29dB.

3. 20 dB(A) Attenuation Claim
EH Comment: "The claimed 20 dB(A) reduction is unverified and overstates performance."

Clarification:
I acknowledge that theoretical attenuation can be misleading. However, the reference to 20 dB(A) was originally intended as a design expectation. The Evolved Acoustics BS4142 survey (May 2024) measured a 14 dB(A) reduction in practice.

Updated table below

Scenario	Sound Power Level (LwA)	Distance Attenuation	Barrier Attenuation	SPL at Receiver	Rating Level (LAr,Tr)	Background Level	Difference
With Acoustic Barrier (10m)	69 dB(A)	-20 dB	**-14 dB**	35 dB(A)	35 dB(A)	35 dB(A)	0 dB

This background is summarized in DAS Section 4.1 and 4.3, where we also commit to future verification by post install testing.

It's worth noting that this reduction was achieved with a vertical fan arrangement. The proposed horizontal fan is expected to perform better by directing sound away from the receptor and fully behind the acoustic barrier.

4. Measurement Location Discrepancy
EH Comment: "The Evolved report measured a different façade than RBA."

Clarification:
Correct — the Evolved report measured the ground-floor façade, which was specifically requested by the Local Authority during the attended visit. This is documented in Section 2.2 of the Evolved report and referenced in DAS 4.2.1. I was following the advice of the previous EHO whereby it was felt more appropriate to measure at the ground floor facade which is much closer to the ASHP.

5. Tonal Characteristics and Low-Frequency Hum
EH Comment: "Later testing revealed tonal low-frequency sound at 50 Hz."

Clarification:
This was a known issue with the previous unit and is addressed in DAS Sections 4.1.2 and 4.2.2. The new ASHP is inverter-driven, operates at a broadband spectrum (125–1000 Hz), and is not expected to produce tonal peaks. This will be validated in the post-install survey.

6. Use of SRI for Barrier Attenuation
EH Comment: "Reduction estimates appear to rely on barrier material SRI, not path geometry."

Clarification:
This point is well taken. While early references included product specifications, our position is now firmly based on measured real-world attenuation from the Evolved Acoustics BS4142 test — which found a 14 dB(A) reduction at the façade. This is a site-specific, conservative, and verified figure now used throughout the revised NIA. The 14 dB(A) attenuation measured previously (53 dBA → 39 dBA) was achieved despite the vertical fan directing

sound upward over the barrier. The new unit discharges sound horizontally, away from the sensitive façade and through the densest part of the barrier. The tonal peak at 50 Hz, which added a +4 dB penalty under BS4142, does not apply to the new unit. So, the barrier performance is likely to exceed the 14dB that was measured with the previous install. Also noting the ASHP is invertor driven so the noise has been calculated at the maximum and likely to be much less in real world use.

7. Absence of Barrier Calculation Details
EH Comment: "No diffraction or path modelling was provided."

Clarification:
Rather than rely on theoretical models, we propose a BS4142-compliant post-installation test, as outlined in DAS Section 4.3.1, to directly measure final performance. This ensures any conclusions are based on actual site conditions, including the full installation context and operational data. As per above in clarification 6.

8. Requirement for Suitably Qualified Acoustic Report
EH Comment: "A suitably qualified (IOA/ANC) professional must carry out the assessment."

Clarification:
I understand and respect the Council's preference for acoustic assessments to be carried out or verified by a suitably qualified professional, such as a member of the Institute of Acoustics (IOA) or Association of Noise Consultants (ANC).

While my original assessment was submitted in good faith, with the intention of following BS4142 methodology and using relevant site-specific data, I fully appreciate the value of independent verification and the EHO comments.

At the same time, I would like to raise a practical consideration. In this case, the cost of commissioning a new pre-installation BS4142 report would exceed the cost of the ASHP itself, which makes it difficult to justify at this stage for a modest domestic installation that already benefits from proven acoustic mitigation 14dB.

As outlined in the Design and Access Statement (Sections 4.3 and 8.2), I propose to undertake a post-installation BS4142-compliant noise survey, carried out by a fully qualified IOA-accredited consultant. I would welcome the Council's attendance or review of the test results.

This approach is also supported by existing site data:

- The previous ASHP was measured at 39 dBA (Before tonal correction of 4dB) at the nearest noise-sensitive façade (Evolved Acoustics, May 2024);

- The proposed AES Hydro-Pro Z24/32 unit is 8–10 dBA quieter at 1 metre,

- It uses a horizontal fan, discharging away from the receptor and fully shielded by the acoustic barrier — an improvement over the previous vertical fan arrangement which pushed the sound over the barrier ;

- The tonal characteristics observed in the previous unit (a 50 Hz tonal peak triggering a +4 dB penalty) are not expected in the new installation, which features a broadband, non-tonal acoustic profile.

Given these improvements, I believe it is highly likely that the ASHP will meet the 35 dB(A) target in practice, even without a new report. Nonetheless, I remain committed to confirming this through formal testing once installed. I would also appreciate confirmation from Environmental Health as to whether the target applies to the ground or first-floor façade

I hope this is seen as a proportionate and constructive approach, and I would be happy to agree the test methodology with the Council in advance.

Summary

In summary, I hope the above clarifications are helpful in demonstrating that:

- The proposed ASHP is well within the MCS020 size limit (0.643m³), despite earlier suggestions to the contrary;
- A 35 dB(A) façade target has been adopted and is expected to be met based on the equipment's specifications and installation design;
- The existing acoustic barrier has previously achieved a 13 dB(A) reduction, supported by independent measurement (Evolved Acoustics);
- The proposed unit is significantly quieter than the previous ASHP and uses a horizontal fan, which will improve performance of screening;
- No tonal correction is expected, addressing a key issue in the previous installation;
- A post-installation BS4142 assessment will be undertaken by a qualified IOA-accredited acoustic consultant;
- The Council is invited to observe the survey or review the results;
- It is highly likely that the 35 dB(A) limit will be achieved in practice, even prior to formal testing, new ASHP is 8-10dB quieter.

Proposed Next Steps

To move forward constructively, I would kindly propose the following steps if agreeable:

1. **Proceed with installation** of the AES Hydro-Pro Z24/32 ASHP as described, using the existing acoustic mitigation and layout;
2. **Undertake a post-installation BS4142-compliant survey**, conducted by an **IOA-accredited acoustic consultant**, once the unit is operational;
3. **Share the full results with Environmental Health**, demonstrating compliance with the **35 dB(A) façade target**;
4. **Remain open to further dialogue** should the results indicate the need for additional adjustments or mitigation.

I hope this provides reassurance and am very happy to provide any further details. I also welcome a visit from the EHO if they wish to see the proposed installation area

Kind regards
Grant

Email received 24/06/2025

From: **Grant Packham**
Date: Tue, 24 Jun 2025 at 07:55
Subject: Re: AWDM/0500/25 – Determination Update – 20 Hillside Avenue
To: Rebekah Smith <rebekah.hincke@adur-worthing.gov.uk>

Dear Rebekah

Update to EHO as I have now reviewed again the previous site report completed. Attached again for ease.

Perhaps another way to look at in a simple way using previous testing data. You will see in the attached the previous ASHP was measured at 64 dBA LAeq @1m inside its enclosure and 39 dBA at the neighbouring façade, resulting in a 25 dB reduction through distance and barrier effects. A +4 dB tonal penalty applied under BS4142 resulted in a rating level of 43 dBA. The new unit is manufacturer-rated at 58 dBA LAeq @1m (equivalent to 69 dBA LwA), representing a 5 dB quieter source level. With the same or improved attenuation due to better fan directionality, the expected façade level is 30–33 dBA, below the night-time 35 dBA criteria at the worst case. The ASHP will generally work below maximum levels due to its invertor. Also only working in summer months means it will not be under massive strain. Noting ASHP generally become laboured when temperatures are very low.

Scenario	LAeq @ 1m (dBA)	LwA (dBA)	Façade LAeq (dBA)	Tonal Penalty	Rating Level
Previous ASHP	64	75	39	+4 dB	43 dBA
Proposed ASHP	58	69	30–33 (estimated)	0 dB	30–33 dBA
Proposed ASHP – Typical Load	50	61	28–31 (estimated)	0 dB	28–31 dBA

Façade Level Estimation Workings

- Previous ASHP: 64 dBA @1m → 39 dBA at façade → 25 dB attenuation
- Proposed ASHP: 58 dBA @1m → expected same or slightly better attenuation
    - The new ASHP has a horizontal fan, which directs sound into the barrier rather than over it as the previous vertical fan did.
    - This improved directionality is conservatively expected to increase attenuation by 1–3 dB.
    - Therefore:
        - 58 – 25 = 33 dBA (conservative, same attenuation)
        - 58 – 28 = 30 dBA (with improved barrier performance)
- Estimated façade range: **30–33 dBA**

I would still like to move forward with the proposed next step I included in my email yesterday

Thanks
Grant