

TECHNICAL NOTE

John O'Gaunts – Noise and Air Mitigation

794-PLN-HER-00561.2
Final
16 July 2024

Document status

| Version | Purpose of document | Authored by | Reviewed by | Approved by | Review date |
|---------|---------------------|-------------|-------------|-------------|-------------|
| 1 | Draft | JD | TC | TC | 15 May 2024 |
| 2 | Final | JD | TC | TC | 30 May 2024 |

Approval for issue

Thomas Copp

TC

16 July 2024

The report has been prepared for the exclusive use and benefit of our client and solely for the purpose for which it is provided. Unless otherwise agreed in writing by R P S Group Limited, any of its subsidiaries, or a related entity (collectively 'RPS') no part of this report should be reproduced, distributed or communicated to any third party. RPS does not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report. The report does not account for any changes relating to the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report.

The report has been prepared using the information provided to RPS by its client, or others on behalf of its client. To the fullest extent permitted by law, RPS shall not be liable for any loss or damage suffered by the client arising from fraud, misrepresentation, withholding of information material relevant to the report or required by RPS, or other default relating to such information, whether on the client's part or that of the other information sources, unless such fraud, misrepresentation, withholding or such other default is evident to RPS without further enquiry. It is expressly stated that no independent verification of any documents or information supplied by the client or others on behalf of the client has been made. The report shall be used for general information only.

Prepared by:**RPS**

Janine Dykes
Director - Heritage

Sherwood House, Sherwood Avenue
Newark, Nottinghamshire NG24 1QQ

T +44 1636 642 707
E janine.dykes@rps.tetrattech.com

Prepared for:**Newlands Developments**

Contents

| | | |
|----------|--|-----------|
| 1 | INTRODUCTION | 1 |
| 2 | LEGISLATIVE AND PLANNING POLICY FRAMEWORK | 2 |
| | Legislation | 2 |
| | National Planning Policy..... | 2 |
| | National Guidance | 3 |
| | Local Planning Policy | 4 |
| 3 | PLANNING CONTEXT | 8 |
| | Planning Consultation Response | 8 |
| | John O’Gaunts List Description..... | 8 |
| | Noise Mitigation | 11 |
| | Air Quality Mitigation..... | 13 |
| 4 | CONCLUSIONS AND RECOMMENDATIONS | 23 |
| | Conclusion..... | 23 |
| 5 | REFERENCES | 4 |

Appendices

- Appendix A Sonair – Sales Brochure
- Appendix B AAC Nitrosorb – Brochure

1 INTRODUCTION

- 1.1 This Report has been researched and prepared by RPS, on behalf of Equites Newlands (Goldthorpe) Ltd.
- 1.2 This report is to support live planning application with Barnsley Council, reference;2023/1105 and Doncaster reference 23/02596/CON and address concerns regarding mitigation measures for the grade II listed John O'Gaunts (LEN; 1314788) in Hickleton.
- 1.3 The Development Site lies around 3.5 km to the west of Hickleton. A proportion of the vehicles serving the proposed development are predicted to use the A635 to access the A1(M), which is routed directly through Hickleton. This has raised concerns regarding the potential road traffic noise and air quality impacts on John O'Gaunts.
- 1.4 This report looks at the existing property and potential noise and air quality mitigation measures. It notes that works to install additional mitigation will require listed building consent. It therefore seeks to explore the most appropriate options. Each option is assessed for any impact they may cause to the listed building's significance. Taking these findings into account the report will provide recommendations on measures that may be appropriate to pursue.
- 1.5 It should be noted that the Proposed Development Site falls within the boundary of Barnsley Metropolitan Borough Council (BMBC) who are therefore the relevant planning authority, while Hickleton is within the boundary of City of Doncaster Council (CDC).
- 1.6 The findings of this report are based on the known conditions at the time of writing and all findings and conclusions are time limited to no more than 3 years from the date of this report. All maps, plans and photographs are for illustrative purposes only.

2 LEGISLATIVE AND PLANNING POLICY FRAMEWORK

- 2.1 The current national legislative and planning policy system identifies, through the National Planning Policy Framework (NPPF), that applicants should consider the potential impact of development upon 'heritage assets'. This term includes: designated heritage assets which possess a statutory designation (for example listed buildings and conservation areas); and non-designated heritage assets, typically identified by Local Planning Authorities (LPAs) and incorporated into a Local List and/or recorded on the Historic Environment Record.

Legislation

- 2.2 Where any development may affect certain designated heritage assets, there is a legislative framework to ensure proposed works are developed and considered with due regard to their impact on designated heritage assets. This extends from primary legislation under the Planning (Listed Buildings and Conservation Areas) Act 1990.
- 2.3 The relevant legislation in this case extends from section 16 of the 1990 Act which states that special regard must be given by the decision maker, in the exercise of planning functions, to the desirability of preserving or enhancing listed buildings and their setting.
- 2.4 Section 69(1) of the Act requires LPAs to '*determine areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance*' and to designate them as conservation areas. Section 69(2) requires LPAs to review and, where necessary, amend those areas '*from time to time*'.
- 2.5 For development within a conservation area section 72 of the Act requires the decision maker to pay '*special attention [...] to the desirability of preserving or enhancing the character or appearance of that area*'. The duty to give special attention is considered commensurate with that under section 66(1) to give special regard, meaning that the decision maker must give considerable importance and weight to any such harm in the planning balance. However, unlike the parallel duty under section 66, there is no explicit protection for the setting of a conservation area.

National Planning Policy

National Planning Policy Framework (Department for Levelling up Housing and Communities, December 2023).

- 2.6 The NPPF is the principal document that sets out the Government's planning policies for England and how these are expected to be applied.
- 2.7 It defines a heritage asset as a: '*building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest*'. This includes both designated and non-designated heritage assets.
- 2.8 Section 16: Conserving and Enhancing the Historic Environment relates to the conservation of heritage assets in the production of local plans and decision taking. It emphasises that heritage assets are '*an irreplaceable resource, and should be conserved in a manner appropriate to their significance*'.
- 2.9 For proposals that have the potential to affect the significance of a heritage asset, paragraph 200 requires applicants to identify and describe the significance of any heritage assets that may be affected, including any contribution made by their setting. The level of detail provided should be proportionate to the significance of the heritage assets affected. This is supported by paragraph 201, which requires LPAs to take this assessment into account when considering applications.

- 2.10 Under '*Considering potential impacts*' paragraph 205 states that '*great weight*' should be given to the conservation of designated heritage assets, irrespective of whether any potential impact equates to total loss, substantial harm or less than substantial harm to the significance of the heritage assets.
- 2.11 Paragraph 207 states that where a development will result in substantial harm to, or total loss of, the significance of a designated heritage asset, permission should be refused, unless this harm is necessary to achieve substantial public benefits, or a number of criteria are met. Where less than substantial harm is identified paragraph 208 requires this harm to be weighed against the public benefits of the proposed development.

National Guidance

Planning Practice Guidance (DCLG)

- 2.12 The Planning Practice Guidance (PPG) has been adopted to aid the application of the NPPF. It reiterates that conservation of heritage assets in a manner appropriate to their significance is a core planning principle.
- 2.13 The PPG defines the different heritage interests as follows:
- archaeological interest: As defined in the Glossary to the National Planning Policy Framework, there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point.
 - architectural and artistic interest: These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skill, like sculpture.
 - historic interest: An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history, but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity.

Overview: Historic Environment Good Practice Advice in Planning

- 2.14 Historic England have published a series of documents to advise applicants, owners, decision-takers and other stakeholders on managing change within the historic environment. These include Historic Environment Good Practice Advice in Planning (GPAs) documents and Historic England Advice Notes (HEANS).

GPA2: Managing Significance in Decision-Taking in the Historic Environment (March 2015)

- 2.15 This document provides advice on numerous ways in which decision making in the historic environment could be undertaken, emphasising that the first step for all applicants is to understand the significance of any affected heritage asset and the contribution of its setting to that significance. In line with the NPPF and PPG, the document states that early engagement and expert advice in considering and assessing the significance of heritage assets is encouraged. The advice suggests a structured, staged approach to the assembly and analysis of relevant information:
1. Understand the significance of the affected assets;
 2. Understand the impact of the proposal on that significance;

3. Avoid, minimise and mitigate impact in a way that meets the objectives of the NPPF;
4. Look for opportunities to better reveal or enhance significance;
5. Justify any harmful impacts in terms of the sustainable development objective of conserving significance balanced with the need for change; and
6. Offset negative impacts to significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected.

Local Planning Policy

- 2.16 In considering any planning application for development, the planning authority will be mindful of the framework set by government policy, in this instance the NPPF, by current Development Plan Policy and by other material considerations.

Doncaster Local Plan 2015-2035 (Adopted 2021).

Policy 34: Valuing our Historic Environment (Strategic Policy) Doncaster's historic environment will be conserved in accordance with the following principles:

Doncaster's historic environment will be conserved in accordance with the following principles:

- A. Proposals and initiatives will be supported which preserve and, where appropriate, enhance the heritage significance and setting of the Borough's heritage assets (including locally identified undesignated heritage assets), and especially those elements which contribute to the distinct identity of the Borough. These include:
 1. the nationally-important waterlogged archaeological remains at Sutton Common, Thorne Moor, and Hatfield Moor;
 2. the Roman camps and settlements, motte and bailey castles, historic houses, historic parks and gardens and villages, with special regard to those along the Southern Magnesian Limestone Ridge;
 3. the Georgian townscape and the railway heritage of Doncaster, its historic grain, including its street layouts and plot sizes and key views and vistas especially of the spires and towers of Doncaster's churches;
 4. the Borough's historic market towns such as Thorne, Hatfield, Bawtry, and Tickhill;
 5. early twentieth century suburban developments, including planned colliery villages; and
 6. sites and structures associated with aviation history including the heritage of the second world war and cold war.

- B. Proposals and initiatives will be supported which improve the accessibility and enjoyment of the Borough's existing and potential local, regional and national historic attractions in keeping with their heritage significance. These include:
 1. The Mansion House
 2. Cusworth Hall and its parkland
 3. Doncaster Minster (St. George's Church)
 4. Conisbrough Castle
 5. Brodsworth Hall and parkland.

- C. Proposals and initiatives will be supported which identify, promote and secure the long term future of Doncaster's heritage assets. These include:
 1. increasing and making publically available our knowledge and understanding of the historic environment gained through the planning process;
 2. continuing to review existing and prospective parks and gardens of local historic interest and consideration of the designation of buildings of local architectural and historic interest;
 3. the identification of heritage assets at risk and implementing strategies and initiatives to reduce their number through positive management;
 4. supporting the re-use of sites and buildings of heritage significance putting them to viable uses consistent with their conservation; and
 5. supporting investment in the repair and maintenance of Doncaster's historic buildings.

Barnsley Local Plan (Adopted 2019)

Policy HE1 The Historic Environment

We will positively encourage developments which will help in the management, conservation, understanding and enjoyment of Barnsley's historic environment, especially for those assets which are at risk

This will be achieved by:-

- a) Supporting proposals which conserve and enhance the significance and setting of the borough's heritage assets, paying particular attention to those elements which contribute most to the borough's distinctive character and sense of place.

These elements and assets include:-

The nationally significant industrial landscapes of the Don Valley which includes Wortley Top Forge and its associated water management system.

Elsecar Conservation Village, its former ironworks and its workshops which were once part of the Fitzwilliam Estate.

A number of important 18th and 19th century designed landscapes and parks including Wentworth Castle parkland (the only grade I Registered Park and Garden in South Yorkshire), and Cannon Hall Park.

The well preserved upstanding remains of the Cluniac and Benedictine monastery at Monk Bretton.

18 designated conservation areas of special and architectural interest including three town centre conservation areas, as well as large areas incorporating Stainborough Park, Cawthorne, Penistone and Thurlstone.

The 17th century Rockley Blast Furnace and its later engine house.

Gunthwaite Hall Barn, a large 16th century timber framed barn.

Barnsley Main Colliery Engine House and Pithead structures.

The 17th century Worsbrough Mill (the only historic working water mill in South Yorkshire)

Relatively widespread evidence of pre-historic settlements, and occupation which are often archaeological and below ground but sometimes expressed as physical or topographic features.

The boroughs more rural western and Pennine fringe characterised by upland and (often) isolated settlements or farmsteads surrounded by agricultural land and dominated by historic and vernacular buildings built from local gritstone.

- b) By ensuring that proposals affecting a designated heritage asset (or an archaeological site of national importance such as a Scheduled Ancient Monument) conserve those elements which contribute to its significance. Harm to such elements will be permitted only where this is outweighed by the public benefits of the proposal. Substantial harm or total loss to the significance of a designated heritage asset (or an archaeological site of national importance) will be permitted only in exceptional circumstances where there is a clearly defined public benefit.

- c) By supporting proposals that would preserve or enhance the character or appearance of a conservation area. There are 18 conservation areas in the borough and each is designated for its particular built and historic significance. This significance is derived from the group value of its constituent buildings, locally prevalent styles of architecture, historic street layouts and its individual setting which frequently includes views and vistas both into and out of the area. Particular attention will be given to those elements which have been identified in a Conservation Area Appraisal as making a positive contribution to its significance.
- d) By ensuring that proposals affecting an archaeological site of less than national importance or sites with no statutory protection conserve those elements which contribute to its significance in line with the importance of the remains. In those cases where development affecting such sites is acceptable in principle, mitigation of damage will be ensured through preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, an understanding of the evidence to be lost must be gained in line with the provisions of Policy HE6.
- e) By supporting proposals which conserve Barnsley's non-designated heritage assets. We will ensure that developments which would harm or undermine the significance of such assets, or their contribution to the character of a place will only be permitted where the benefits of the development would outweigh the harm.
- f) By supporting proposals which will help to secure a sustainable future for Barnsley's heritage assets, especially those identified as being at greatest risk of loss or decay

3 PLANNING CONTEXT

Planning Consultation Response

- 3.1 In their planning consultation Response dated 6th February 2024 and 22 April 2024 details concerns about John O’Gaunts. Both responses state;

“The modelling shows that during the construction phase nitrogen dioxide will increase by less than 1 microgram per cubic metre (1µg/m³), however the operational phase results in a more significant increase of 5.09 µg/m³ at the façade of one dwelling, identified as John O’ Gaunts, with several other areas increasing by over 2 µg/m³.

These increases are of concern and will add to the difficulty in reducing the NO₂ concentrations in Hickleton. The CDC Air Quality Officer does not consider that the mitigation schemes outlined within Sections 8.8 and 8.9 of the AQA are viable measures and are therefore unacceptable.

Mechanical Ventilation and filtration.

The first consideration, and perhaps the overriding one, is that John O’ Gaunts is a listed building. Therefore, it is unlikely that permission for installation would be forthcoming given the impact the system would have on the listed building.

It should also be noted that the AQA identifies 3 other dwellings in Hickleton where the nitrogen dioxide concentration increases between 2.2 and 2.49 µg/m³.

Nevertheless, mechanical ventilation and filtration is a method for reducing the impact of ambient pollution within a premises, however it is usually only considered as part of a new build within an AQMA. This proposal will be a retrofit into an existing premises.

Such a refit would require the agreement of the owner, plus there is the matter of the funding of ongoing operational costs (electricity, consumables etc).

Finally, the Air Quality Regulations are applicable to concentrations at the façade of dwellings therefore this method will not address the detrimental effect of the proposal on the AQMA.”

- 3.2 The air quality work undertaken to support the application confirmed that only John O’Gaunts required specific air quality mitigation (VC-00052805-EN-RP-0001). As such, this report discounts the other buildings’. As a listed building any modifications to John O’Gaunts will require listed Building Consent.

John O’Gaunts List Description

Official list entry

Heritage Category: Listed Building

Grade: II

List Entry Number: 1314788

Date first listed: 10-Apr-1986

List Entry Name: John O’Gaunts

Statutory Address 1: John O’Gaunts

The scope of legal protection for listed buildings

This List entry helps identify the building designated at this address for its special architectural or historic interest.

Unless the List entry states otherwise, it includes both the structure itself and any object or structure fixed to it (whether inside or outside) as well as any object or structure within the curtilage of the building.

For these purposes, to be included within the curtilage of the building, the object or structure must have formed part of the land since before 1st July 1948.

Understanding list entries

Corrections and minor amendments

Location

Statutory Address: John O'Gaunts

The building or site itself may lie within the boundary of more than one authority.

District: Doncaster (Metropolitan Authority)

Parish: Hickleton

National Grid Reference: SE 48223 05326

Details

This list entry was subject to a Minor Amendment on 23 November 2021 to update text and reformat to current standards

SE4805 12/78

HICKLETON HICKLETON VILLAGE John O'Gaunts

GV II

Stable with granary now house. Probably early C18. Deeply-coursed, squared limestone; stone slate eaves course to pantile roof. Two storeys, door and two windows to first floor. Large quoins. Round-arched door to right of centre has bonded jambs and ashlar voussoirs; C20 door set back within. Square window on right has C20 casement in square-faced surround with deep lintel. External stone steps on left rise to door in cemented surround. First-floor windows as ground floor. Square-cut gable copings. Right return, facing road, has three square openings. Converted cartshed of later date attached to rear right not of special interest.

Listing NGR: SE4822305326

Significance of John O'Gaunts

- 3.3 Historic farmsteads and their buildings contribute to the character of our countryside, demonstrating our history of farming and settlement. It is unfortunate that John O'Gaunts has lost its context amongst the farmstead as this reduces its legibility and group value.
- 3.4 John O'Gaunts is stable with granary above. The creation of a granary over working buildings such as stables and cart sheds was common farming practice from the 18th century. This provided shelter for horses or livestock in the stables below while storing grains and feed in the granary above to ensure the dry and secure storage of grain after it has been threshed and winnowed.
- 3.5 The building has now been converted into residential use and has its own boundary so the historic association with a farmstead has been eroded. Its origins are still evident in its architectural features. The hatch for dropping sacks of grain from the granary into carts survives on the south elevation and the large external stairs on the west elevation are typical of granary use, as they required substantial external steps and/or a hoist for pulling up or lowering the heavy sacks of grain.



Plate 1 - West Elevation of John O'Gaunts

- 3.6 The stable use is less obvious externally, particularly with the ground floor openings which appear to be later insertions, possibly associated with its residential conversion. The building was not viewed internally and no information regarding its conversion could be found but taking into account the residential conversion it is envisaged internal fabric is predominantly modern and architectural details relating to the previous uses have been lost.
- 3.7 John O'Gaunts is a vernacular building constructed from local stone, it has the potential to provide evidence about regional construction methods.



Plate 2 - South elevation, hatch is visible the gable end

- 3.8 To summarise, John O'Gaunts is a good example of a vernacular agricultural building. Its historic interest lies in its role in agricultural practice and farming and the insights it provides into past farming practices. The combination of stables and granaries in one building reflects the self-sufficiency of and resourcefulness of farmers who needed to care for their animals and store food supplies efficiently. Built from local stone and vernacular building methods it demonstrates the history of the region.
- 3.9 Its architectural interest lies in the detailing it retains from its original use. There are several key features that make it architecturally intriguing including the external stair, surviving hatch and attractive arched entrance. The design of stables with granary above is interesting in its ability to maximise use of the land and buildings available to farmers.



Plate 3 - John O'Gaunts from the northwest, evidence of opening for hatch or hoist evident in the gable end

Noise Mitigation

Options for noise mitigation

- 3.10 There are several options for noise mitigation which include secondary glazing and double glazing. The difference in options depends on the current scenario regarding windows on the property.
- 3.11 The windows in the property are modern timber single pane double glazed casements. They include inappropriate modern detailing such as a projecting bottom rail and integrated cill. The proportions and sections of the windows do not reflect historic joinery.
- 3.12 Beyond the windows John O'Gaunts has secondary glazing which can be seen in Plate 4 below.
- 3.13 Both options have successfully been installed within grade II listed buildings. Historic England have produced guidance on traditional windows and their upgrading; *Traditional Windows Their Care, Repair and Upgrading (2017)*.



Plate 4 - Window at John O'Gaunts, secondary glazing visible

3.14 In this guidance Historic England advises;

“Windows are one of the most vulnerable parts of a building to noise transmission due to their relatively lightweight construction. Depending on the number of openings and the quality of the seals between the openings, a single glazed window without seals may only achieve a noise reduction of 18-25dBA. When closed, sealed double glazed units perform little better than single glazing because the two panes of glass are rigidly connected with a minimal cavity so the two panes resonate together. A secondary window with an air space of 100mm or more decouples the movement of the two panes of glass and reduces the resonance between the two. Sound insulation of up to 45dBA can typically be achieved. Higher levels of sound insulation are obtained as the gap increases, particularly if the reveals are lined with an acoustic material, though minimal improvements occur with cavities beyond 200mm. The use of thicker or acoustic laminate glass within the secondary window also improves the acoustic performance of the installation.” (Historic England, 2017)

3.15 In reference to window design Historic England's guidance states;

“Where a window that diminishes the significance of the building, such as a PVCu window or an ‘off the peg’ timber window of an inappropriate pattern, is to be replaced the new window should be designed to be in keeping with the period and architectural style of the building. It may be possible to base the design on windows that survive elsewhere in the building or it may be necessary to look for examples in other buildings of the same period and style close by. The local planning authority may also be able to offer advice. In some cases this may involve reinstating the structural masonry opening to the correct proportions. Where the objective is to sustain or enhance the significance of a building by introducing an accurate copy of a historic window which is multi-paned, then single glazing could be required as incorporating double glazing may not be possible due to the size of the

glazing bars. Glazing each pane would also reproduce the broken reflections that may be needed. In such cases, draught-proofing or secondary glazing or other compensatory measures to enhance the energy efficiency in other parts of the building may need to be considered.” (Historic England, 2017).

- 3.16 This is pertinent as the windows at John O’Gaunts lack traditional detailing and include modern detailing that detracts from the building’s historic and agricultural character, so there would be an opportunity to replace the existing windows with a design that enhances the significance of John O’Gaunts.
- 3.17 Given the existing double glazing and secondary glazing there are limitations to any further measures that could be undertaken to the windows to provide additional mitigation against noise. The potential to install a bigger profile of double glazing in the window and secondary glazing could be explored but the level of improvement this would offer is envisaged to be limited. If these are explored there would be an opportunity to create and install more appropriate windows into the property. It Enhancements could still be achieved with upgrades the windows’ sound insulation, subject to detailing.
- 3.18 Mechanical ventilation could also be used to mitigate noise if further this is required. Mechanical ventilation will be explored below.

Air Quality Mitigation

Mechanical Ventilation

- 3.19 Where there is a planning requirement to mitigate NO2 from indoor air mechanical ventilation can be used to mitigate this.
- 3.20 There are many mechanical ventilation units on the market at present. We do not wish to specify particular units for use at John O’Gaunts but the Technical Note will explore the possibility of installing a mechanical ventilation unit within the property. For this reason, the note will look the following two products to understand the implications of installing them. this shows that there are sufficient options available and that one will be acceptable to provide comfort at this stage of the process
- 3.21 For the purpose of this advice note we have looked at (the brochures for these products are included in Appendix A and Appendix B);

- AAC Equinox
- Sonair F+

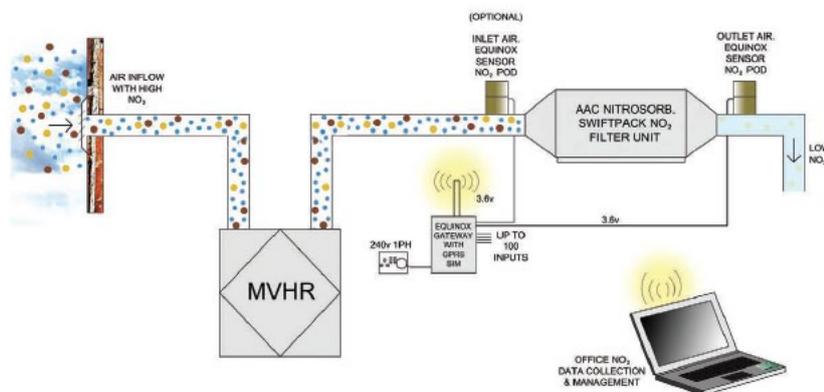


Plate 5 - Equinox requires at least one air vent, possibly two

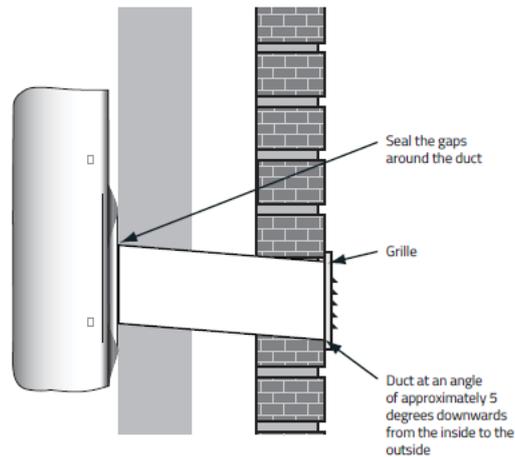


Plate 6 - Titon Sonair requires a duct angled 5 degrees downwards to outside

- 3.22 The Equinox system (Plate 5) requires at least one outlet and possibly two inlets as shown above. The outlet could be through the wall or roof and the inlet appears to be horizontal, so it would be required to come through the wall.
- 3.23 A model such as Titon Sonair would require a duct angled 5 degrees downwards, for this reason the vent would have to be installed on a wall. Wall vent options are explored below.
- 3.24 With both products it is not clear whether the vent must be installed on a particular elevation i.e. away from the road where the source of NO₂ is greatest.
- 3.25 The introduction of a duct/s and vent/s would require listed building consent. This advice note explores ventilation options and considers any impact they may have on the listed building's significance. It also looks at the existing vents on the listed building and their impacts.

Existing vents on the building

- 3.26 There are existing vents on the building that can be seen from the public highway both on the south and west elevations.
- 3.27 With all of these solutions there will be an impact to fabric. Without a specific worked up scheme it is difficult to assess the age and interest of the fabric that would be affected.
- 3.28 If vents similar to the existing vent were installed it is likely the duct would need to go through the original stonework and result in some loss of this masonry. This would be a small amount of loss resulting in a low level of less than substantial harm.
- 3.29 There would be an element of public benefit arising from the improved air quality. This would need to be considered in the planning balance which will be discussed later. For the matter of exploring appropriate options we have continued on the basis that the principal of a duct would be acceptable and detailed design to minimise impacts to the listed building can be pursued further at a later stage, if required.
- 3.30 Vent on South Elevation; The existing vent on the south elevation is unobtrusive (Plate 7), this is a result of its tone, finish and the proportions that match the coursing and place it flush with the face of the wall.
- 3.31 This is a modern intervention but it aligns with previous palette of solutions for the buildings. Visually and historically this could be an appropriate solution so there is an option to install another similar vent in a subtle location if mechanical ventilation is required.

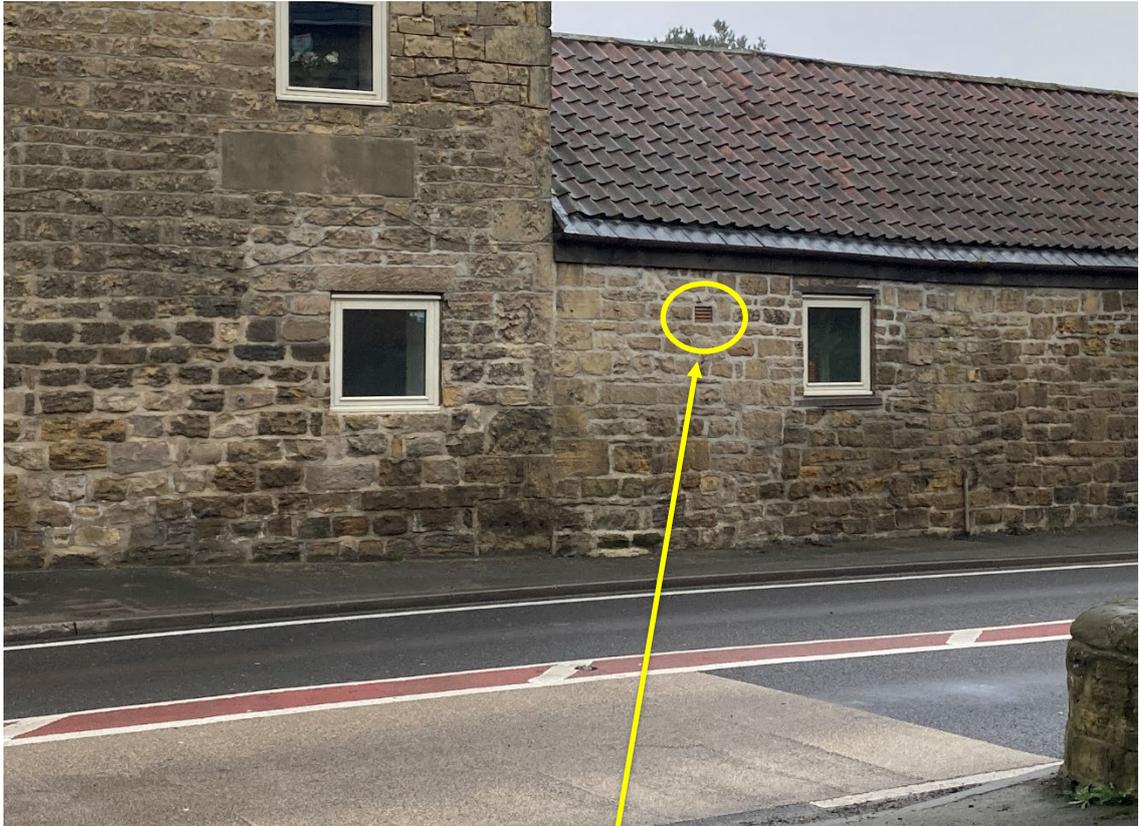


Plate 7 - Existing vent in John O'Gaunts



Plate 8 - Existing vent on south elevation



Plate 9 - Existing vent on west elevation

- 3.32 Vent of West elevation: The vent on the west elevation is not as appropriate as the vent on the south elevation. While it follows the coursing the red/brown colour is prominent against the stone wall and it projects from the face of the stonework. While this forms the pallet of materials on the barn it is visually and historically inappropriate and should be discounted.

Different Types of Vents

- 3.33 It is also important to look at other products on the market that could have less visual/ physical impact on the listed building. This includes taking ducts out of the roof and walls.

Wall Ventilation

- 3.34 The following options are available to introduce ventilation into the building through the wall;
- Gable end opening in attic
 - New wall vent

Gable end opening in the attic

- 3.35 There is an option to take the ducting through the first-floor ceiling and then use the existing timber hatch on the gable end in the roof space. The existing vertical timber shutter does not appear to be of any particular age, quality or merit so there is scope to replace it with an appropriate louvre of similar appearance to the existing timberwork. If it is felt the existing hatch should be retained it could be repaired and adapted to include ventilation.



Plate 10 - Gable end with timber ventilation visible in roof space

- 3.36 Taking vents out to the attic will result in ducting going through the ceilings. Generally, the internal ceilings are thought to be modern and date to its conversion, they would therefore make no contribution to the listed building's significance.
- 3.37 This solution could be carried out without loss of historic fabric and visual impact, therefore causing no harm to the listed building's significance.
- 3.38 Given the size of the hatch it would be possible to route several outlets into the attic space and then run them all out from the single hatch. If several outlets are required this would reduce impact to the external elevations and the interruption of historic by negating the requirement to make holes in the original external walls for ducting and vents.
- 3.39 Below are examples from Historic England's Guidance; *Adapting Traditional Farm Buildings* showing high quality examples of how ventilation grilles could be introduced to John O'Gaunts.



Plate 11 - Sensitive ventilation and shutters (Historic England; Adapting Traditional Farm Buildings)



Plate 12 - Ventilation slits and grilles on openings, also ventilation slits above (Historic England)

New Ventilation

- 3.40 There are several options for alternative wall ventilation. There are standard grilles that can be introduced, shown in (Plates 13-15) such as buff clay air brick, a metal grate or a built ventilation slits.
- 3.41 All of these options would involve the insertion of a duct through the external wall which would result in some loss of historic fabric. As discussed above this would cause loss of a small amount of historic fabric resulting in a low level of less than substantial harm. There would be an element of public benefit arising from the improved air quality. This would need to be considered in the planning balance which will be discussed later. For the matter of exploring appropriate options we have continued on the basis that the principle of a duct would be acceptable.



Plate 13 - Metal air brick vent

- 3.42 [Metal Vent](#); A metal vent could fit within the stone coursing, the texture would differ from the stone but efforts could be made to colour match it to the stonework to prevent it being conspicuous and prominent. Historically metal vents have played a crucial part in assisting ventilation and air circulation they were commonly employed to cover openings to allow air flow even agricultural buildings. Visually and historically this could be an appropriate solution.



Plate 14 - Low quality plastic vent

3.43 Plastic Vent: The plastic vents are visually obtrusive as they sit proud of the wall, the standard sizes do not fit with the coursing proportions and the colour and texture are different. This would have a negative impact on the aesthetic appeal and architectural character. Additionally, the use of plastic does not align with traditional materials and construction methods which would compromise the buildings authenticity, impacting on the significance it derives from its historic fabric and construction. For these reasons this option should be discounted.



Plate 15 - Existing ventilation holes

3.44 Ventilation Holes: Ventilation was a significant requirement in most farm buildings, both for livestock and the storage of crop. They come in a wide range of forms – cruciform, vertical or diamond slits

and diaper honeycomb patterns. These were traditionally left open and unglazed though some may have had simple wooden shutters. While they are not obvious on John O’Gaunts it could be possible to introduce some.

- 3.45 They would need to be coherent in their design and follow a rhythm/ pattern. Depending on the mechanical ventilation specification they could be in the wall at ground, first floor or attic space. A simple series of ventilation slits/ holes formed in the masonry structure would be visually and historically appropriate in this building although it would result in some re-building of historic fabric.
- 3.46 Clay air brick: These have historically been used in agricultural buildings they were incorporated into structures to help regulate temperature and moisture levels within buildings, especially in areas where ventilation was crucial for storing crops or housing livestock. Clay air bricks tend to be a later intervention and were generally not part of the fundamental design in the way that ventilation slits were, especially in older agricultural buildings.
- 3.47 The buff colour and clay finish could blend in with the stone wall and the proportions could also align with the stone coursing and fit flush with the wall so it would assimilate visually. This option would be less pleasing and convincing historically. We would therefore discount this as an option.

Roof Ventilation

- 3.48 It is possible to get different versions of replacement pantiles with vents in them. The visual impacts of these are discussed below.
- 3.49 Taking vents out to the roof/ attic will result in ducting going through the ceilings and roof covering (through a replacement vented pantile).
- 3.50 Generally, the internal ceilings are thought to be modern and date to its conversion, they would therefore make no contribution to the listed building’s significance. Vents that had to be installed through the roof could be placed between rafters to prevent unnecessary loss of fabric and respect the architectural proportions.
- 3.51 While there is a visible impact this is minor, and the raised profile is considered to be balanced by the natural materiality. It is therefore considered this option could be considered on a less prominent slope, ie. Rear roof slope,



Plate 16 – Concave Pantile roof vent (Repeco Roof Tiles Ltd)

- 3.52 Concave Pantile Roof Vent; The colour finish and proportions of the tile align with the rest of the roof and the authentic clay material aligns with the historic materials and building's integrity. The concave vent does project above the other pantiles which does draw the eye to the difference in profile.



Plate 17 - Plastic flush vent (Klober Single Pantile)

- 3.53 Single Pantile roof vent; The flush fitting options with vents in are plastic and only appear to be made for interlocking tiles which the traditional pantiles are not.
- 3.54 Plastic does not align with traditional materials and construction methods which would compromise the buildings authenticity, impacting on the significance it derives from its historic fabric and construction.
- 3.55 The plastic materiality and impractical nature of these tiles means that they should be discounted.

4 CONCLUSIONS AND RECOMMENDATIONS

Conclusion

- 4.1 This Technical Note has been prepared to support the live planning application with Barnsley Council, reference;2023/1105 and Doncaster reference 23/02596/CON and address concerns regarding mitigation measures for the grade II listed John O’Gaunts (LEN; 1314788) in Hickleton.
- 4.2 This report has reviewed the existing listed building’s situation and detailed potential noise and air quality mitigation measures. Each option has been assessed for any impact it would have on the listed building’s significance. Some options have been discounted due to negative impacts.
- 4.3 The report has highlighted that there are options to mitigate against noise and air quality that could be implemented with minimal impact on the listed building’s significance.
- 4.4 **Noise mitigation;** With regards to noise mitigation the John O’Gaunts already has double glazing with secondary glazing units behind them. Both measures are usually sufficient to mitigate against noise, so in terms of fenestration further enhancements are unlikely to be made to the current scenario. If further mitigation against noise is required mechanical ventilation could be used, this would be the same unit as the air quality mitigation ventilation and the same measures as detailed below.
- 4.5 **Air Quality Mitigation;** Air quality could be mitigated by mechanical ventilation, this would involve the installation of an air outlet. Having looked at several options to bring ventilation outlets through the roof and walls it is considered that mechanical ventilation could be installed into John O’Gaunts without causing harm to its significance.
- 4.6 Of the options that have been considered for wall and roof ventilation there are a few that could be explored further. The opportunity to utilise the existing hatch would have the least impact visually and on historic fabric. There would also be the possibility to route several outlets out from the single hatch. It is therefore recommended this is the preferred option in mechanical ventilation is required.
- 4.7 To summarise, there are reasonable options to mitigate against both noise and air quality that could be implemented with minimal impact on the listed building’s significance. The information is proportionate at this stage and detailed designs to minimise impacts to the listed building can be pursued if required. If vents are required their installation may result in the loss of historic fabric, if so this would be a small amount of loss resulting in a low level of less than substantial harm. This would need to be considered in the planning balance. Paragraph 208 of the NPPF requires this harm to be weighed against the public benefits of the proposed development, in this case.

5 REFERENCES

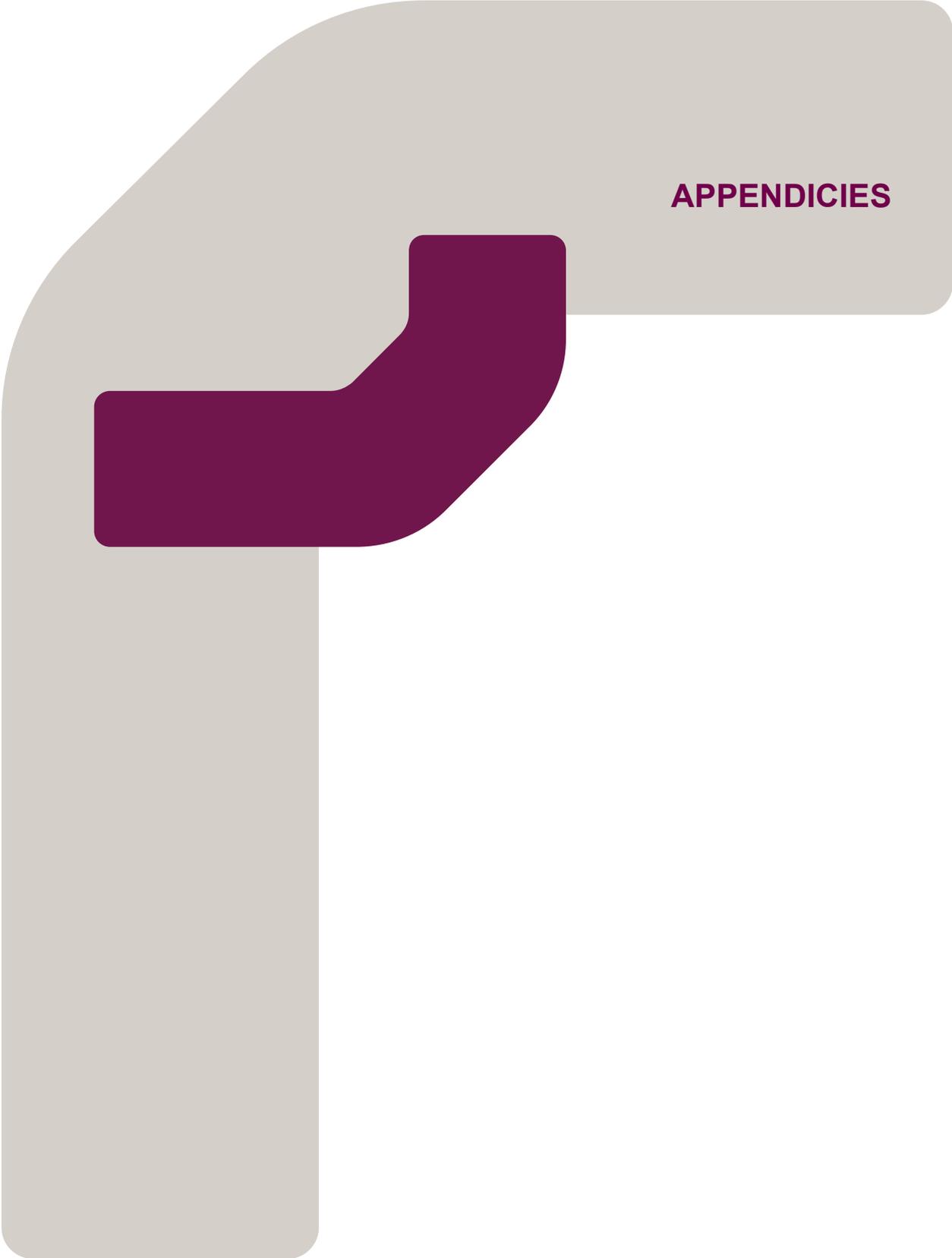
AAC Eurovent AAC Nitrosorb - Indoor Air NO2 Filtration System [Report]. - [s.l.] : AAC Eurovent, n.d..

Historic England National Farm Building Types [Online] // Historic England Publications. - Historic England, 2013. - 8 May 2024. - <https://historicengland.org.uk/images-books/publications/national-farm-building-types/national-building-types-2014/>.

Historic England List Entry 1314788 [Online] // The List. - Historic England, 10 April 1986. - 8 May 2024. - <https://historicengland.org.uk/listing/the-list/list-entry/1314788?section=official-list-entry>.

Historic England Traditional Windows Their Care, Repair and Upgrading [Online] // Historic England. - February 2017. - 2 May 2024. - <https://historicengland.org.uk/images-books/publications/traditional-windows-care-repair-upgrading/heag039-traditional-windows-revfeb17/>.

Titon Ventilation Systems Sonair Ventilation Systems; Sales Brochure [Report]. - [s.l.] : Titon, n.d..



APPENDICIES

Appendix A

Sonair – Sales Brochure

Sonair - Ventilation Systems

Sales Brochure



Sonair F+

Effective sound attenuation with mechanical ventilation

Sonair F+ is a wall mounted mechanical input ventilation unit which when switched on provides background trickle ventilation and excellent noise attenuation.

With acoustics becoming an important factor in densely populated areas, the requirement for sound attenuating ventilators has never been greater.

Where standard/acoustic trickle ventilators cannot provide the necessary attenuation levels, more sophisticated solutions are required. The Sonair achieves exceptional noise reduction whilst filtering and cleaning the air around you.



Simple LCD Control designed to regulate between mechanical ventilation and passive trickle ventilation.

Discreet Design ideal for refurbishment and retro fit applications.

Ultra Quiet Running reducing noise pollution whilst supplying fresh air to make a comfortable environment.

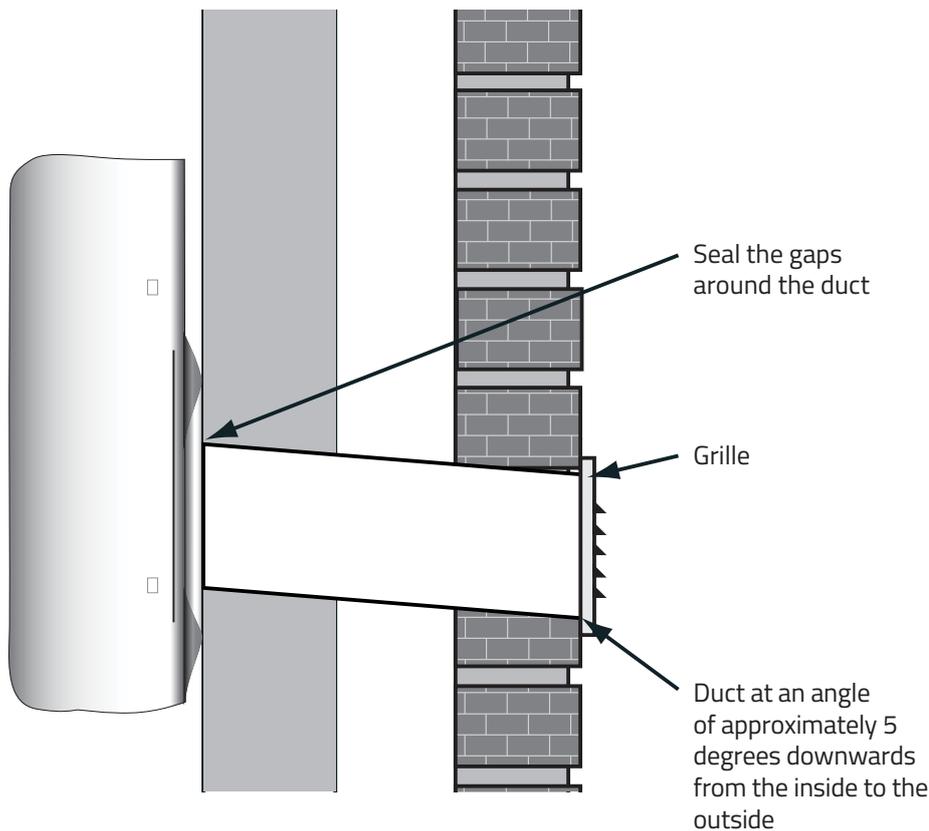
Effective Filters offering either G3 or F6 filters to protect against external pollutants.



Benefits & Features

- Exceptional attenuation of external noise pollution (up to 56dB), ideal for built up areas effected by traffic, railways and general noise pollution
- Sonair F+ ventilates and cleans the air
- Independently tested by the BRE
- Air cleaning and filtration
- Low energy consumption
- Straight forward install with no complications
- Meets guidelines for occupant accessibility
- Increase occupant awareness of system operation
- Supplied with a flexible cable and a 13 amp plug
- For use in conjunction with Titon trickle vents
- Unit can be cleaned and serviced without disturbing ducting

Installation



Dimensions

445 (H) x 310 (W) x 134 (D)

Performance

(Full test details available on request)

Input airflow rate (m³/h) – 28-225

Acoustic D_{n,e,w} (+/-) – 55/56* (Sonair F+).

*depends on filter

Tested to the 'Noise Insulation Regulations'

| Capacity | Sonair F+ | |
|-----------------------|--------------------------|--------------------------|
| | G3/ISO Coarse 45% Filter | F6/ISO ePM2.5 50% Filter |
| 30 m ³ /h | <11.5 | <19 |
| 45 m ³ /h | <18.5 | 27 |
| 60 m ³ /h | 23.5 | 33 |
| 90 m ³ /h | 34 | 41.5 |
| 140 m ³ /h | 43.5 | 51.5 |

| Sound Attenuation according to ISO 140-10 | | |
|---|----|----|
| D _{re,w} dB (A) | 56 | 55 |

Independently tested to requirements of noise insulation regulations.

Sound Production

Sound pressure level, LpA; 10 m² according to ISO 3741

Product Codes

| Product | Product Code |
|--|-----------------|
| Sonair F+ including G3/ISO Coarse 45% Filter | S103SAUK |
| Sonair Filter G3/ISO Coarse 45% | F211 |
| Sonair Filter F6/ISO ePM2.5 50% | F209 |

Housing

Plastic ABS white RAL 9003

Voltage

220-240V/50 Hz

Energy Consumption

Max. 13 Watt at 17 l/s (60 m³/hour)

Max. 43 Watt at 62.5 l/s (225 m³/hour)

Ventilation Capacity

Max. 62.5 l/s (225 m³/hour) with a G3/ISO Coarse 45% filter

Warranty

2 years

Ducting

100 mm (standard)

Appendix B

AAC Nitrosorb – Brochure



LEADERS IN AIR & LIQUID PHASE FILTRATION TECHNOLOGY
0800 999 4884



AAC NITROSORB[®]

INDOOR AIR NO₂ FILTRATION SYSTEMS

Residential

Commercial

Educational



Indoor Air Quality Solutions for Residential Properties, Schools, Universities and Commercial Buildings

Indoor Air NO₂ Filtration Systems

The European Union Air Quality and Clean Air for Europe 2008/50/EC (CAFE) Directive set stringent NO₂ levels for designated Air Quality Management Areas.

At AAC Eurovent we design and manufacture cutting edge NO_x filters.

AAC NITROSORB® filters provide planners, developers and mechanical consultants with an effective and sustainable NO₂ mitigation solution for indoor air projects in new build and retrofit residential, commercial and educational schemes, where NO₂ concentrations exceed the accepted level of 40ug/m³

Our high performance solutions offer a number of key benefits;

- Suitable for residential, commercial and educational applications
- Suitable for both new build and retrofit schemes
- Widely accepted by planners in Air Quality Management Areas
- Recommended for use by leading UK air quality consultants
- Routinely specified by mechanical consulting engineers
- Solutions available to suit both Mechanical Ventilation Heat Recovery systems and centralised Air Handling plant
- Offer a very low pressure drop
- Can be supplied in both horizontal and vertical air flow orientations
- Range of standard units available to suit most applications
- Bespoke design service also available
- Compatible with the AAC Colourcell® media filter system
- Transparent viewing panel for ease of inspection
- Available in either Plain Galvanised or Electric Powder Coat finish





Indoor Air NO₂ Mitigation for Mechanical Ventilation Heat Recovery Units

For residential apartments where individual ventilation systems are connected to an MVHR system, we recommend the AAC Swiftpack® NITROSORB® filter system.

AAC Swiftpack® NITROSORB® Filter System

The AAC Swiftpack® NITROSORB® filter system incorporates AAC NITROSORB® media into the AAC PR™ range of media filter cells.

This compact, high performance solution is suitable for both horizontal and vertical airflows, is designed for use with a wide a range of volume flow rates, and can be accommodated in a false ceiling void as low as 100mm.

The units meet the low pressure drop requirements of MVHR units installed under part F of the Building Regulations and when situated downstream from the MVHR (recommended) offers the benefit of longevity, alongside low pressure drop, with no increased energy consumption from the indoor ventilation system.

PM10 or PM2.5 particulates can also be easily removed by the installation of a suitably rated particulate pre-filter, thus enabling the unit to comply with the particulate aspect of the legislation.

Features & Benefits

- Independently MCERTS tested and verified
- Accepted by planners as an AQMA NO₂ mitigation measure
- Compatible with MVHR units
- G3 after-filter fitted as standard
- Optional PM10/PM2.5 filter can be installed into the unit
- Smart remote system monitoring available
- Compact design, allowing for easy installation
- Bespoke design service available





NO₂ Mitigation for Commercial and Educational Schemes with Air Handling Units

The AAC NITROSORB® filter system can easily be installed into an AAC Swiftkit® or an AAC Skeleton™, to meet the requirements of larger commercial and educational buildings served by AHUs.

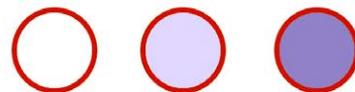
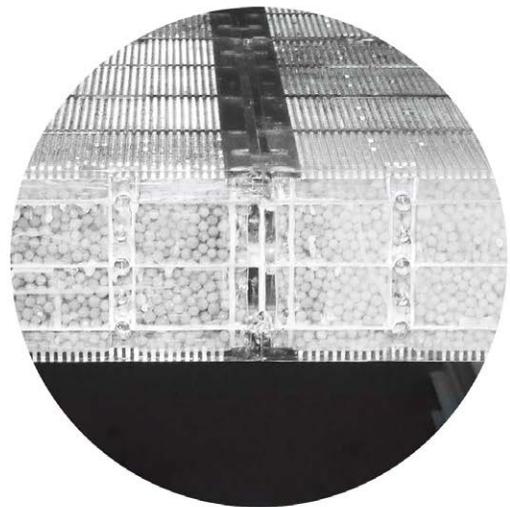
These units can then be connected to the AHU, or if space allows, fitted within it.

AAC Swiftpack® NITROSORB® Filter System with Colourcell®

Our unique AAC Colourcell® media filter system is designed to save time and money by providing end users and maintenance technicians with a clear indication of the status of the NITROSORB® media and notification when the media replacement should be carried out.

AAC Colourcell is a patented, transparent filter cell containing a media formulated to react to changes in the condition of installed AAC NITROSORB media, by undergoing a series of visible changes in appearance from white (new media) to pink (spent media). Our units feature a transparent viewing panel for ease of inspection.

The result can be further verified by analysis of a media sample in the laboratory.





AAC EQUINOX® - NO₂ Monitoring & Data Acquisition

AAC EQUINOX® is a NO₂ monitoring & data acquisition solution designed to work seamlessly with the AAC Swiftpack® NITROSORB® filter system, continuously measure the efficiency and performance in reducing indoor air levels of NO₂. In addition to the monitoring of NO₂, AAC EQUINOX® has the capability to monitor: carbon monoxide, temperature, relative humidity and noise.

The Limitations of Conventional NO₂ Monitoring

Low data resolution (monthly data from diffusion tubes) and prohibitive costs have rendered conventional air quality monitoring techniques unsuitable for the continuous monitoring of NITROSORB® filter efficiency. AAC EQUINOX® has been developed as a bespoke solution to deliver a continuous monitoring system that offers planners and end users a low cost, reliable and accurate way to continuously measure the efficiency and performance of installed AAC Swiftpack® NITROSORB® filter systems.

About the AAC Swiftpack® NITROSORB® Filter System

The AAC Swiftpack® NITROSORB® filter system is a unique NO₂ mitigation solution designed to assist developers, planning consultants, consulting engineers and local authority planning departments to comply with the **EU Directive 2008/50/EC (the CAFE Directive) European Union Air Quality and Clean Air for Europe 2008.**

The role of AAC NITROSORB® in NO₂ reduction is well established, and the solution is regularly specified by consulting engineers for residential, school and commercial projects in Air Quality Management Areas where there is a planning requirement to mitigate NO₂ from the indoor air.

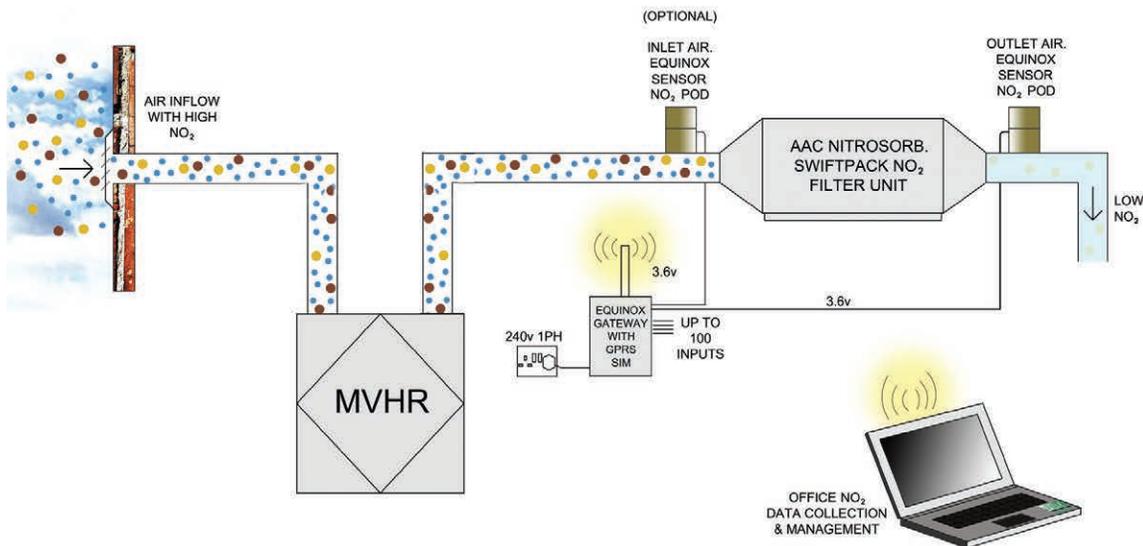


What is EQUINOX®?

AAC EQUINOX® is a wireless NO₂ monitoring system which operates using an electro-chemical NO₂ sensor on the filter discharge. A second optional sensor can also be fitted on the filter inlet if required.

How Does EQUINOX® Work?

AAC EQUINOX® is designed to communicate over a wireless ZigBee protocol. The EQUINOX® units can be deployed in a network, or mesh which only requires a single gateway hub to communicate data from the entire network back to the central server.



The schematic drawing above illustrates how EQUINOX® is positioned to provide end users with the critical information needed to measure the efficiency and performance of their installed AAC Swiftpack® NITROSORB® filter system.

Why choose the AAC EQUINOX®?

- A high quality, accurate, low cost solution with low maintenance and running costs
- Simple to install and easy to understand
- Remote analysis with set point alarm providing media replacement alerts
- Provides reliable assurance to end users that the filters are performing well and protecting them

AAC EQUINOX® and AAC COLOURCELL®

AAC EQUINOX® is designed for use in conjunction with the AAC COLOURCELL® media filter cell technology, which offers end users an important visual indication of the condition of the installed NITROSORB® media. In practice these changes take place over a 2-5 year period, but by monitoring changes in the appearance of the COLOURCELL® filter media, end users and maintenance personnel are able to easily determine when the NITROSORB® filter media may require to be changed, by way of a transparent viewing panel included in our NITROSORB® filter units.

AAC EQUINOX® is available either for purchase or very affordable low cost hire.

Address: AAC Eurovent Ltd, AAC House, Unit K, Maybrook Industrial Estate, Maybrook Road, Brownhills, West Midlands, WS8 7DG

UK Tel: 0800 999 4884 | **Fax:** 08444 77 4797 | **International Callers Tel:** +44 (0) 1543 379823

Email: sales@aceurovent.co.uk | **Website:** www.aceurovent.co.uk

The information contained within this brochure was correct at time of print. All graphics and text on this page are protected by Copyright. © 2017 AAC Eurovent®
AAC Eurovent is continuously improving its products and reserves the right to alter designs without prior notice



Case Study

Location: Brentford, London, 7th Floor Building, off the A40
AAC EQUINOX® Assessment Period: 3/9/2015 -18/9/2015

The Problem

Continuous poor air quality in this area, with spikes in excess of 200ug/m³.

The Solution

A large AAC Swiftpack® NITROSORB® system was installed on the roof of the property, in conjunction with an AAC EQUINOX® system.

The red line in the graph overleaf represents the inlet/upstream concentration and the blue line shows the downstream concentration after the AAC Swiftpack® NITROSORB® filter unit.

The horizontal line indicates the 40ug/m³ acceptable limit, and the pink line represents exceedance for a short period of time where the AAC Swiftpack® NITROSORB® filter unit passes air above the 40ug/m³ NO₂ level, due to some extraordinarily high spikes in the overall air quality.

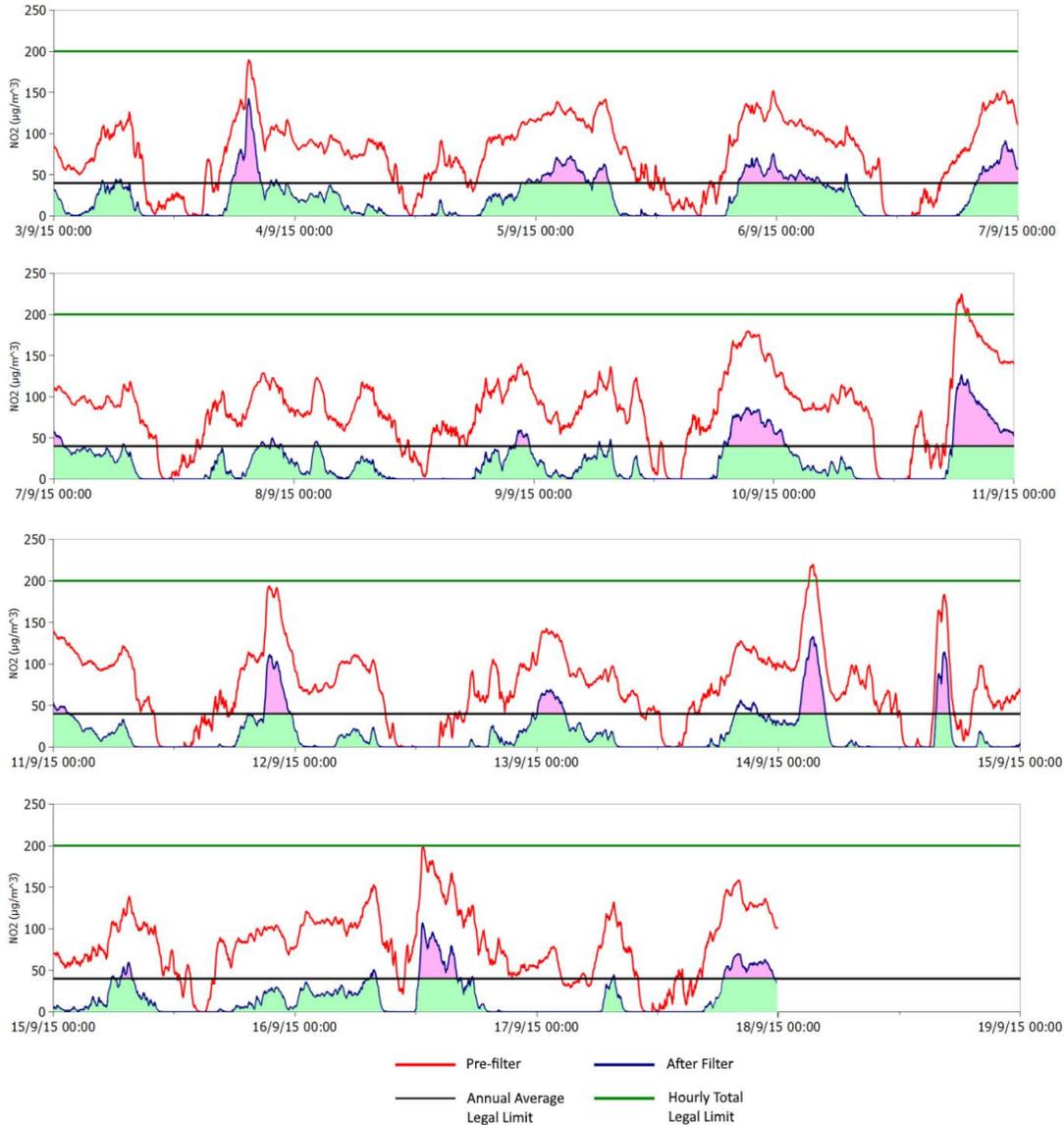
The Result

The average inlet concentration is 70.4ug/m³ and the average downstream concentration is 17.3ug/m³ demonstrating a filter efficiency of 75.43%.

AAC EQUINOX® NO₂ Monitoring & Data Acquisition

The effectiveness of AAC EQUINOX® in monitoring of the AAC Swiftpack® NITROSORB® filter system is clearly demonstrated in the graph below.

AAC Eurovent EQUINOX® Assessment 3/19/15 - 18/9/15



| | Before Filter | After Filter |
|---|---------------|--------------|
| Study Mean Average (µg/m ³) | 70.4 | 17.3 |
| Exceedances of 200µg/m ³ Hourly Averaged | 2 | 0 |
| Filter Efficiency (%) | 75.43 | |

To find out more about the role of AAC NITROSORB® and AAC EQUINOX® in NO₂ mitigation, call: **0800 999 4884** or email: sales@aceurovent.co.uk

Address: AAC Eurovent Ltd, AAC House, Unit K, Maybrook Industrial Estate, Maybrook Road, Brownhills, West Midlands, WS8 7DG
UK Tel: 0800 999 4884 | **Fax:** 08444 77 4797 | **International Callers Tel:** +44 (0) 1543 379823
Email: sales@aceurovent.co.uk | **Website:** www.aceurovent.co.uk

The information contained within this brochure was correct at time of print. All graphics and text on this page are protected by Copyright. © 2017 AAC Eurovent® AAC Eurovent is continuously improving its products and reserves the right to alter designs without prior notice