Environmental Benefits to Decarbonisation Scheme
United Learning Trust

October 2024

Barnsley Academy
Farm Road
Kendray
Barnsley
S70 3DL

CONTENTS

1.0 Introduction 1

2.0 Review of Proposed Works 1

3.0 Green Belt Appraisal 2

3.1 National Planning Policy Framework Requirements 2

3.2 Barnsley Local Plan 3

3.3 Protecting the Purpose of Green Belt Land 3

4.0 Environmental Benefits 4

4.1 ASHPs Environmental Benefits 4

5.0 Conclusion 5

1.0 Introduction

United Learning Trust have been successful in obtaining £1,610,358 of grant funding through the Public Sector Decarbonisation Scheme (PSDS) Phase 3c for Barnsley Academy. The funding is to support the public sector's transition from fossil fuel reliant heating systems to low carbon technologies, such as heat pumps.

The grants are used to upgrade heating systems in public buildings to be cleaner, cheaper, and powered by renewable energy. The fund has been launched by Salix on behalf of the Department for Energy Security and Net Zero and will provide £1.425bn of grant funding over the financial years 2022/23 to 2025/26. The scheme will ultimately help reduce fossil fuels as well as making public buildings more comfortable and efficient to warm.

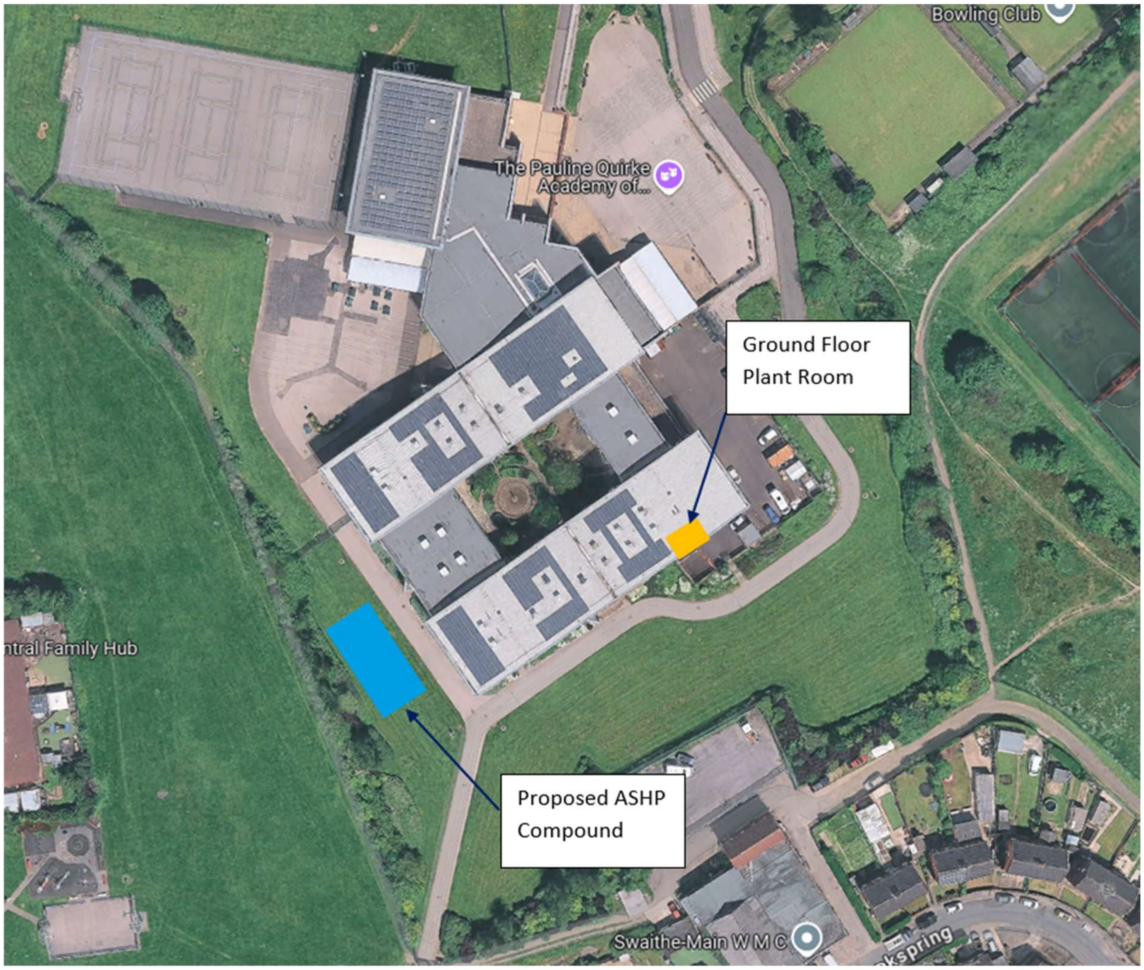
This report has been prepared to outline the environmental benefits associated with the installation of Air Source Heat Pumps (ASHPs) at Barnsley Academy, which sites within Barnsley's Green Belt.

2.0 Review of Proposed Works

Barnsley Academy is a large secondary school located in South Yorkshire. The School was constructed in 2006 and has roughly 900 students.

The School has obtained grant funding to assist with decarbonising its heating and hot water supply. The building currently utilises gas fired boilers, which were part of the original construction and are, therefore, end of life, as defined by CIBSE Guide M. The grant funding has been secured to replace the gas fired boilers, which serve both heating and hot water to the building, with new ASHPs.

The ASHPs will remove almost all of the site's reliance on natural gas, converting the building to grid supplied electricity. The image overleaf shows the proposed location of the ASHP compound in relation to the existing site.



In order to minimise the impact to the Green Belt land, the compound has been sited within the existing site curtilage and away from the hedgerow. A preliminary ecological assessment has been carried out which confirms that the hedgerow and green space is not the habit to any protected species. Due to the gradient of the site, there will be limited visibility of the compound from residential properties and the siting is next to a field, which further limits its visual impact.

3.0 Green Belt Appraisal

3.1 National Planning Policy Framework Requirements

Barnsley Academy is located in an area designated as Green Belt. National policy in the NPPF places great weight on the importance of protecting areas designated as Green Belt. When considering proposals within the Green Belt, the NPPF clearly states that new development is generally considered to be inappropriate, unless there are very special circumstances, which include meeting one of a number of defined exceptional circumstances. Of most relevance to the proposed development at the School are the exceptions which include:

- **The extension of alteration of a building** (exception c), provided that it does not result in disproportionate additions over and above the size of the building;

- **Limited infilling or the partial or complete redevelopment of previously developed land** (exception g), whether redundant or in continuing use (Excluding temporary buildings), which would not have a greater impact on the openness of the Green Belt than the existing development

The School's campus serves as an important community education facility operating from over 10,000m^2 of building space. The site clearly meets the definition of previously developed land, which the NPPF defines as "Land which is or was occupied by a permanent structure, including the curtilage of the developed land…". In context, the proposed development is not considered to be inappropriate development and is aligned with the relevant exceptions as defined in the NPPF (paragraph 149).

The ASHP compound is proposed close to the existing building. The site is currently not used for any purpose by the School, but sits within the existing site curtilage. This site has limited visibility and any long distance views from out of the campus would see the compound against the backdrop of a two storey building. These minor built works are limited in nature and in scale. Against the backdrop of the existing campus estate, they would have no greater impact on the openness of the Green Belt.

The NPPF specifically notes that renewable energy projects in the Green Belt require scrutiny and may be deemed inappropriate development. This policy is intended to control the introduction of renewable energy projects into areas of the Green Belt with limited existing infrastructure or existing built development, unlike the Barnsley Academy site. Even if it is considered that this part of the policy should carry some weight, the NPPF highlights that the environmental benefits of such schemes, associated with increased production of energy from renewable sources, can be considered to meet the very special circumstances required to approve development within the Green Belt.

These proposals comprise a central strand of the School's decarbonisation programme. The environmental benefits are significant and will reduce energy demand as well as reducing the emission of greenhouse gasses from the operation activities of the School. The evidence and quantification of the benefits is described further in Section 4 of this report.

3.2 Barnsley Local Plan

The Barnsley Local Plan was adopted in 2019 and it seeks to protect the Green Belt in accordance with national planning policy in the NPPF. Policy CC2 Sustainable Design and Construction identifies the importance of climate change and the emphasis on minimising resource and energy consumption through the inclusion of sustainable design and construction features. Whilst this focuses on new developments, the importance of low or zero carbon energy sources can be evidenced here as Barnsley Academy look to transition away from fossil fuel reliance to new heat pumps.

3.3 Protecting the Purpose of Green Belt Land

The main purpose of Green Belt policy is recognised in the NPPF as being the prevention of urban sprawl by keeping land permanently open and preserving the essential characteristics of Green Belts, which are their openness and their permanence. In doing so, Green Belts are described as having five purposes (paragraph 135):

a) To check the unrestricted sprawl of large built up areas

b) To prevent neighbouring towns merging into one another
c) To assist in safeguarding the countryside from encroachment
d) To preserve the setting and special character of historic towns, and
e) To assist in urban regeneration, by encouraging the recycling of derelict and other urban land

The proposed development at Barnsley Academy will not reduce the ability of the Barnsley Green Belt to achieve these objectives and the purpose for including the land around Barnsley Academy within it.

4.0 Environmental Benefits

4.1 ASHPs Environmental Benefits

Barnsley Academy is made of one building, which was constructed in 2006. The main building is circa 10,350m^2 and is fed from gas fired boilers, which serve both heating and hot water. Gas use for heating and hot water accounts for roughly 95% of total gas consumption on site.

The gas consumption of the building is 1,428,507 kWh per annum. By transitioning from gas fired boilers to ASHPs, the School is expected to reduce its fossil fuel reliance by 1,357,082 kWh per annum.

Whilst ASHPs remove the need for fossil fuels, they do rely on electricity for power, which in this case, will be supplied by the National Grid. An estimated 372,513 kWh of electricity will be required per annum for the ASHP installation.

Overall, the net benefit to the School and to the Council is a carbon emissions reduction of 171 tonnes of CO_2 per annum. Over the typical life expectancy of ASHPs, which is deemed as a minimum of 20 years by the funding provider, the installation of ASHPs to Barnsley Academy is expected to save c.3,428 tonnes of CO_2.

Additional benefits also include the reduction in other greenhouse gases typically emitted by gas fired boilers. The boilers will emit both carbon monoxide and NO_x gases into the environment. As the boilers are now beyond typical life expectancy, their efficiencies have reduced since their original manufacture, which means that the boilers now require greater volumes of natural gas to deliver the same thermal output to the building. As the efficiencies reduce, the level of greenhouse gases increases. These gases are typically emitted through a flue and dispersed into the environment. Transitioning to heat pumps removes all greenhouse gas emissions at source as these now rely solely on grid supplied electricity.

The Government has targeted the National Grid to be Net Zero carbon by 2035, which means that the heat pumps could have zero carbon impact during their lifetime when considering electricity supply.

ASHPs provide greater energy efficiency than conventional gas boilers. The typical efficiency of a gas boiler is around 90-95% whereas the efficiency of the proposed heat pumps is around 350%. This means that there is a significant reduction in the amount of energy required to use the heat pumps when compared to the existing boilers.

5.0 Conclusion

The approach of installing ASHPs in lieu of the existing gas fired boilers serving the main boiler at Barnsley Academy will see a total reduction in carbon emissions for the School of c.171 tonnes per annum. As the National Grid reaches Net Zero by 2035 under the latest Government guidelines, the carbon emission reduction will increase further as grid supplied electricity will also bear no carbon emissions.

Similarly, the location of the ASHP compound is on a small green area near to the main building and delivery road that currently has structures in place. The area is further divided from green space by the School's fence and hedgerow.

The proposed development meet the exceptions test of 'c' and 'g' as defined in NPPF. The proposals will not reduce the openness of the Green Belt nor will they limit the function or purpose of the Green Belt in this location. Furthermore the environmental benefits are significant and clearly serve as the type of very special circumstances in which development in the Green Belt should be supported.

The School and Trust have their own carbon neutrality target of 2030 and this project will go a long way to supporting that. This scheme, is considered a flagship scheme for the Trust and would be advantageous to the rest of the Trust and Education Sector to showcase plausible routes to achieve Net Zero and decarbonise heating and hot water.

The scheme will also support the local community with tendering Contractors typically from the Yorkshire region and who will utilise local sub-contractors.