

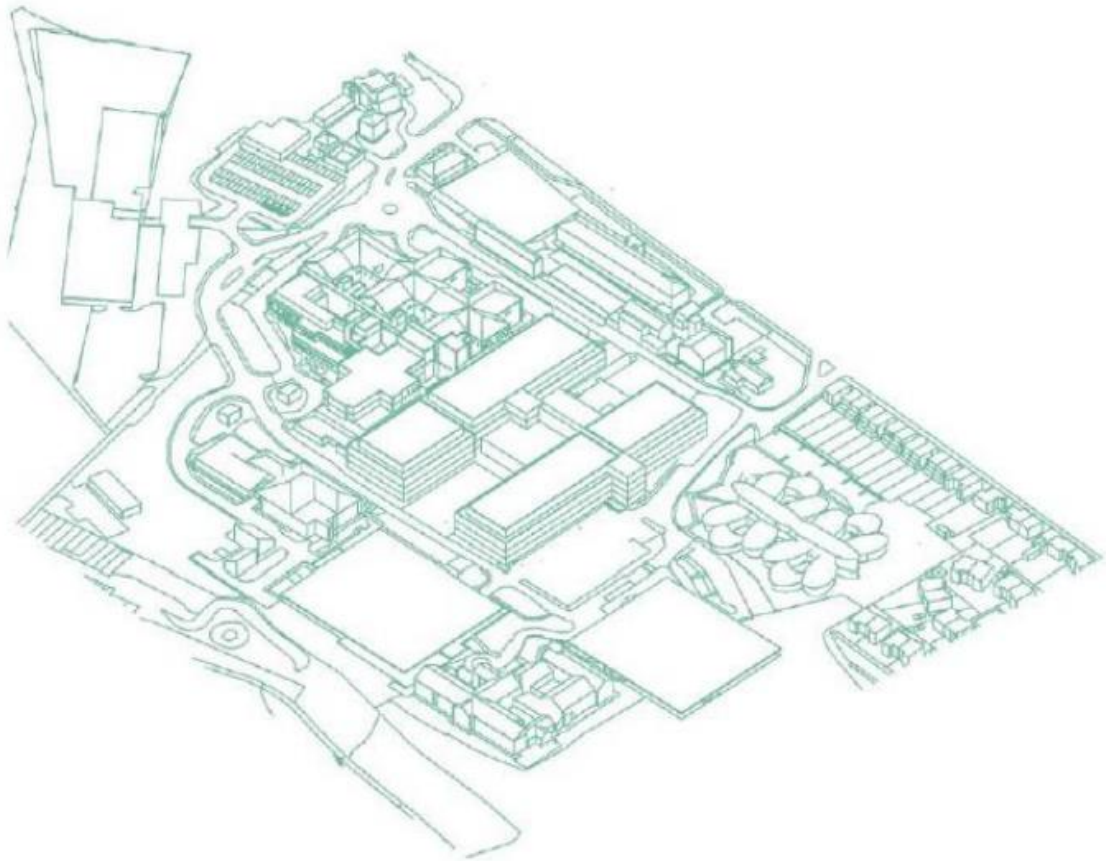
Northern Care Alliance NHS Foundation Trust

Fairfield General Hospital Generator Compound

Emissions Impact Assessment Report

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V2 | 30th September 2025



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 292852-00

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Document Verification

Project title Fairfield Community Hospital Generator Compound
Document title Emission Impact Report
Job number 292852-00
Document ref
File reference

Revision	Date	Filename			
V2		Description			
			Prepared by	Checked by	Approved by
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		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document Verification with Document ☒

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1. Introduction

This report has been prepared by Ove Arup and Partners Ltd (Arup) on behalf of Northern Care Alliance NHS Foundation Trust (NCA) to support an amendment of a planning condition to planning permission no 70502 (installation of a generator compound containing 2 no. generators and 2 no. fuel tanks with surrounding fence) at Fairfield General Hospital.

In particular, this report seeks to provide a response to Condition no. 2 of the above planning permission. After further consideration and by considering and assessing the nature and use of the standby generators, the below report provides a justification as to why the Best Available Techniques (BAT) guidelines are no longer applicable and that the generators should now be assessed against the Medium Combustion Plant Directive (MCPD).

The wording of Condition no. 2 is as follows:

“Notwithstanding the details included within the approved drawings the installed generators shall not exceed the EA Best Available Technique (BAT) guidelines for standby generators (2000mg/Nm³). A scheme for the construction of exhaust stacks above the generators shall also be submitted to, and approved in writing by the Local Planning Authority within 6 months of the date of the decision.”

Reason. In order to improve the dispersion of emissions and reduce the overall impacts and concentrations at receptor locations pursuant to Places for Everyone Joint Development Plan Policy JP-S5 - Clean Air.”

Taking this report into account, we propose that the condition is amended to the following:

Notwithstanding the details included within the approved drawings, the installed generators shall only be used for testing purposes for no more than 50 hours per year and in situations where the primary power supply to the hospital has failed. The generator shall comply with the emission limits set out in the Medium Combustion Plant Directive (MCPD).

2. Study Approach

Fairfield Hospital has sought approval for the installation and use of standby backup generators to mitigate the impact of potential power outages from a loss of primary electricity supply. The backup generators are part of the enabling works for the planned future works for the wider Fairfield General Hospital masterplan strategy.

Power outages in the UK in this region are infrequent, with occurrences often only lasting a maximum of a few hours. However, the potential consequences of losing power during such events can be critical particularly in a healthcare setting.

The backup generators are only expected to be operated during annual routine testing and maintenance activities. In the unlikely event of a power supply failure, they are also designed to be used in an emergency scenario until a stable grid connection is restored. The proposed standby backup generators will therefore serve as a safeguarding measure to ensure the hospital can continue to function during a power outage.

3. Assessment Findings

A technical note was prepared in April 2024 by Arup to accompany the planning application for the standby backup generators. In relation to air quality, this provided an overview of relevant legislation, policy and guidance, baseline air quality in the area, identified nearby sensitive receptors, and provided a qualitative review of potential air quality impacts arising from the testing of the generators.

A review of industrial sources was conducted using the Environment Agency's public register. Regulated (or prescribed) industrial processes are classified as Part A(1), A(2), Part B or MCP processes, and are regulated through the Environmental Permitting (England and Wales) Regulations. The larger, more polluting processes are regulated by the EA and the smaller, less polluting ones by local authorities. Local authorities focus on regulation for emissions to air, whereas the EA regulates emissions to air, water and land, including the air emissions focussed MCP permits.

No large Part A(1) processes with relevant emissions to air, or MCP Permits were identified as currently being regulated at the Hospital.

Fairfield General Hospital has three active Permits regulated by the EA, namely: -

- Northern Care Alliance Hospitals NHS Trust – Waste Exemption Registration (WEX347530) – relating to the sorting and denaturing of controlled drugs on site;
- Peninne Care NHS Foundation Trust – Waste Exemption Registration (WEX348640) – relating to the sorting and denaturing of controlled drugs on site; and
- Bury Health Care NHS Trust - Discharges to water and groundwater for England (NW/016990354/001) – relating to the discharge of wastewater on site.

Based on this search, there are currently no regulated combustion sources on-site, falling under either the IED or MCPD regimes.

Fairfield Hospital (including the location of the proposed generators) is not located within an Air Quality Management Area and data from nearby local air quality monitoring sites, together with Defra's mapped backgrounds suggest pollutant concentrations in the vicinity of the Hospital are well below the relevant air quality objectives.

On the absence of existing regulated combustions on-site, together with the minimal expected run time and low background pollutant concentrations, the note concluded that it is not anticipated that there will be any likely significant effects as result of the installation of proposed standby backup generators.

The Technical Note did also set out options for how to potentially further reduce emissions and associated impacts by considering lower emission generators and investigating flue stack height options for example, however these were not considered to be essential to result in no likely significant effects.

4. Regulatory Framework

4.1 Best Available Technique (BAT)

The concept of Best Available Techniques (BAT) was introduced through the Industrial Emissions Directive (IED), which was first introduced in 2010. The Environmental Permitting (England and Wales) Regulations¹ (EPR) implement and consolidate various European directives and domestic legislation, in particular the Industrial Emissions Directive (IED) into UK law.

The IED adopts an integrated approach to controlling pollution to air, water and land, and establishes industry standards for polluting industrial activities. Such activities include operation in facilities such as refineries, large combustion plant, energy from waste plants and chemical production industries. Larger industrial facilities undertaking specific types of activity are required to use BAT to reduce emissions to air, water and land. BAT means the available techniques which are the best for preventing or minimising emissions and impacts on the environment. 'Techniques' include both the technology used and the way the installation is designed, built, maintained, operated and decommissioned.

¹ The Environmental Permitting (England and Wales) Regulations 2016, UK Statutory Instruments 2016 No. 1154.

The types of activities which fall under IED are outlined in Schedule 1, Part A(1) of the EPR. Combustion activities which fall under the IED are for sites with an aggregated capacity of greater than 50 megawatt thermal (MWth) (Part A 1.1 activity type).

Facilities which do not meet the thresholds of IED are not obligated to demonstrate compliance with BAT requirements for that specific industry.

In the case of Fairfield, the backup generators are rated at approximately 5.4 MWth each, totalling 10.8 MWth across the site; well below the 50 MWth threshold. This leaves a margin of 39.2 MWth before the IED regulations would be applicable. It is also crucial to consider any boilers present on site, as they may contribute to the total thermal output, however as set out above, there are currently no regulated combustion sources on-site, falling under either the IED or MCPD regimes, suggesting the risk of this is low.

An extract from the UK Government's guidance on BAT application² is provided below, which outlines the above in the first bullet point:

"This guidance applies to emergency backup diesel engines that are:

- on combustion installations – Part A 1.1 activity greater than 50 megawatt thermal (MWth)*
- part of an Industrial Emissions Directive (IED) installation as a directly associated activity*
- both static and mobile – this guidance does not apply if the mobile plant is temporary*

This guidance gives:

- build standards for diesel engines which minimise emissions of oxides of nitrogen (NO_x)*
- ways of operating diesel engines that minimise impacts on air quality"*

4.2 Medium Combustion Plant Directive (MCPD)

In 2018, the Medium Combustion Plant Directive (MCPD) was introduced as a new regulation. Unlike the IED, the MCPD specifically applies to smaller combustion plant (including diesel generators), with a capacity more than or equal to 1 MWth and less than 50MWth. The MCPD outlines the emission limit values (ELVs) for different types of combustion activities and is focussed on emissions to air only.

Due to the capacity of the plant at Fairfield Hospital (10.8 MWth) it is therefore considered that plant falls under the MCPD, rather than the IED and is therefore not required to implement BAT.

Under MCPD where it can be demonstrated that the combustion plant will be in operation for less than 500 hours per year then the plant is exempt from meeting the MCPD ELVs as stated in the Environment Agency (EA) Guidance on complying with emission limits at MCP:

"New MCPs operating less than 500 hours per year as a 3 year rolling average are exempt from meeting MCPD ELVs³".

In the case for plant which are used as standby generators, provided they operate for less than 50 hours per year for maintenance purposes only, are exempt from meeting the ELVs. It is important to note that there are no operational limits imposed during emergency situations, such as power outages at critical facilities including hospitals. The relevant MCPD section extracted from the Government's guidance⁴ is provided below:

²Available at: [https://www.gov.uk/guidance/emergency-backup-diesel-engines-on-installations-best-available-techniques-bat#:~:text=Guidance,-Emergency%20backup%20diesel%20engines%20on%20installations%3A%20best%20available%20techniques%20\(BAT,e mission%20limit%20values%20\(ELVs](https://www.gov.uk/guidance/emergency-backup-diesel-engines-on-installations-best-available-techniques-bat#:~:text=Guidance,-Emergency%20backup%20diesel%20engines%20on%20installations%3A%20best%20available%20techniques%20(BAT,e mission%20limit%20values%20(ELVs)

³Environment Agency Medium combustion plant (MCP) (2019): comply with emission limit values. Available at: <https://www.gov.uk/guidance/medium-combustion-plant-mcp-comply-with-emission-limit-values>

⁴ Available at: <https://www.gov.uk/guidance/specified-generator-when-you-need-a-permit#generators-affected-by-medium-combustion-plant-directive-mcpd-controls>

“Emergency backup generators

From 1 January 2019, a backup generator only used to provide power at a site during an emergency is excluded. However, it is a MCP and requires a permit by the appropriate deadline.

Using a backup generator for the following is not classed as emergency use:

- *providing a balancing service (whether procured or not)*
- *demand side response operations such as triad avoidance or fast frequency response*

For an on-site emergency, there's no restriction on the total number of hours:

- *a backup generator can operate for – operators must try to reduce the period and frequency of emergency use*
- *'black start' backup generators can operate for*

Number of hours you can test backup generators

You must not carry out more than 50 hours testing a year for each backup generator. You must get agreement in writing from your regulator if you want to increase this limit. The regulator can exclude commissioning time within the written agreement.

For each backup generator, you must record the number of hours you test during the year. This is to demonstrate that you meet the exclusion criteria.

If you exceed the limit of 50 hours testing a year without written agreement the regulator will take appropriate enforcement action.”

4.3 Medium Combustion Plant Permit

As the proposed plant falls under the MCPD, a Medium Combustion Plant (MCP) Permit will need to be applied for in due course, as the operation of the plant will be regulated by the EA. A key component of a MCP permit application is the preparation of an air quality assessment, which evaluates the potential emissions and their impact on the surrounding environment. The level of assessment required would be confirmed with the EA at the time of the application.

The EA will place appropriate operational conditions for the plant upon permit granting. These conditions will be informed by a comprehensive review of any environmental assessments, taking into account the specific characteristics of the plant and its proposed management. These conditions are designed to ensure the plant is operated safely and minimise the impact to the environment through the regulation of emissions, together with regular monitoring requirements.

5. Consideration of alternatives

5.1 Effect of Using HVO

Hydrotreated Vegetable Oil (HVO) is considered as “Gas oil or equivalent substitute to be agreed in writing with the Environment Agency” within permitting. The HVO fuel is derived from organic sources and has a lower carbon footprint compared to diesel. The use of HVO fuel is considered as an approach to reduce emissions of the generators, which is approved for use with Mitsubishi engines at Fairfield Hospital. HVO is generally considered to improve NOx, CO and particulates and be a low carbon fuel. On that basis HVO is a preferred option by the Environment Agency.

Although HVO can offer some reduction in NOx emissions, it may not bring emissions down to the 2000 mg/Nm³ limit specified in the Environment Agency BAT guidance. More importantly however for a

Hospital, source availability is likely to be the primary concern, similarly as outlined in the EA's guidance⁵ for the use of emergency generators at data centres which fall under IED it states the following:

“for diesel standby provision and reliability of re-supply, during peak delivery demand, and source availability is a significant concern so it would not be reasonable to expect HVO across the sector, so for that reason HVO is not considered formally as BAT by the EA for aggregated standby”.

6. Conclusions

Based on the findings of the Technical Note air quality assessment; considering the absence of existing regulated combustions on-site, together with the minimal expected run time and low background pollutant concentrations, the Note concluded that it is not anticipated that there will be any likely significant effects as result of the installation of proposed standby backup generators in their currently proposed form.

Recommendations were set out in the Note for how to potentially reduce emissions and impacts further, however these were not considered to be essential to result in no likely significant effects.

The generators will fall under the requirements of the Medium Combustion Plant Directive (MCPD) because the aggregated capacity of the generators is well below the lower threshold (50WMth) of a large combustion plant which falls under the Industrial Emissions Directive (IED). Though plant which is considered to be a Medium Combustion Plant (MCP) is not required to demonstrate compliance with Best Available Technique (BAT), the MCPD does provide a framework designed to regulate emissions from MCPs.

The EA guidelines on BAT from back-up generators are on the basis of sites regulated under the IED, which is not the case at Fairfield Hospital.

It is important to note under the regulatory framework, as the standby backup generators are proposed for emergency purposes, (operated less than 50 hours year year) they are exempt from meeting the Emission Limit Values (ELVs) outlined in the MCPD. The reason for this is because the plant is designed to only be operated during testing and emergency scenarios when there is a loss of primary power supply. These emergency events are often unexpected and therefore the exemption allows the facility to operate flexibly to support the hospital's preparedness and responsiveness in emergency situations, ensuring that the generators can function effectively whenever required without the burden of stringent emission compliance measures.

In conclusion, the application of the MCPD is the most appropriate regulatory framework for the generators at Fairfield Hospital. The specific circumstances surrounding the generator use confirm the exemptions for the operation of standby generators.

A MCP permit will need to be applied for which will result in the need to undertake further environmental assessments. The permit is designed to place conditions on the operation of the facility to minimise the impact to the environment. Through the MCP permit, the Environment Agency will regulate the facility and assess its compliance with the issued permit.

It therefore does not seem appropriate to require the facility to operate in line with the ELVs and techniques prescribed for a much larger combustion plant, taking into consideration the capacity of the standby generators, their proposed operation and the need for the plant.

⁵ Environment Agency, Data Centre FAQ Headline Approach (2022). Available at: <https://pixl8-cloud-techuk.s3.eu-west-2.amazonaws.com/prod/public/bb871ef0-8316-4127-89dc63c6b3b7cd04/Environment-Agency-Roundtable-Data-Centre-FAQ-v21-Everything-Working-Draft-Released-to-TechUK.docx>

