

One Trinity Gardens

Dynamic HVAC optimisation in a multi-let office

15.4%	29%	710 MWh
Electricity saving against a 9% target	Gas saving against a 22% target	Energy saved

14,500 m² multi-let office | Newcastle | Existing BMS retained | Aberdeen Standard Investments (abrdn) / KJ Tait Engineers

£68,943	166.5 tCO₂
Cost saving project-reported saving	Carbon reduction project-reported reduction

Executive summary

EcoAI's HVAC optimisation technology was integrated with the existing Building Management System at One Trinity Gardens, a 14,500 m² multi-let office in Newcastle. The project focused on coordinating HVAC systems more effectively while retaining the installed controls infrastructure.

The optimisation used building conditions, thermal behaviour and local weather forecasts to improve how heating, ventilation and cooling operated together. Optimised signals were sent to the BMS every 15 minutes, helping reduce energy use while maintaining the working environment.

The project delivered 15.4% electricity savings and 29% gas savings, equating to 710 MWh of energy saved, a reported £68,943 cost saving and a 166.5 tonne CO₂ reduction.



Measured performance

The project exceeded the initial savings targets for both electricity and gas. The results below reproduce the performance figures reported in the original project analysis.

Electricity savings



Gas savings



Outcome	Project result
Electricity	15.4% saving against a 9% target
Gas	29% saving against a 22% target
Total energy saved	710 MWh
CO ₂ reduction	166.5 tonnes
Cost saving	£68,943

How the optimisation worked

The solution coordinated HVAC systems so they worked together more efficiently, using the building's thermal storage capacity and weather forecast data to anticipate demand rather than relying only on reactive control.

EcoAI operated as an optimisation layer around the existing BMS. Optimised signals were sent every 15 minutes while the installed controls and engineering infrastructure remained in place.

The approach also produced operational insight that could be used by the engineering team to investigate abnormal system behaviour and direct maintenance activity more effectively.

Client and engineering perspectives

CLIENT PERSPECTIVE

"At Aberdeen Standard Investments, we are committed to help tackling climate change - for our clients, shareholders and the generations to come. We recognise that buildings, by their nature, have a direct impact on the environment - from the carbon footprint of bricks, concrete and steel, to energy use in operations. We welcome the success of the EcoAI trial in increasing efficiency and improving the working environment. We look forward to further progress in these important areas."

Dan Grandage - Head of ESG Real Estate, Aberdeen Standard Investments

ENGINEERING PERSPECTIVE

"KJ Tait has been working with Standard Life Investments (Abdrn) for the past decade to reduce energy consumption across their portfolio; together we have a target of a 2% reduction in energy consumption each year from a baseline of 2009. Having completed many of the easy wins, including behavioural changes and capital investment, we have been on the lookout for innovative technologies, particularly around a building's BMS system, which can be overlooked when it comes to energy savings. Together with the benefits to the occupants, EcoAI has the potential to save a significant amount of energy both across electricity and gas within a short payback. The added bonus being that the savings are guaranteed over the lifetime of the payback."

Paul Miller - Energy & Environmental Engineer, KJ Tait

Operational value beyond the headline saving

Following integration, the project team carried out a system review that surfaced further opportunities for improvement. These included air temperature and pressure sensors, underfloor heating and cooling control setpoints, and airflow switches.

The review also identified chiller cycling that was occurring continuously because faulty FCU controllers and actuators were overheating spaces. This illustrates the wider operational value of continuous HVAC optimisation: the data can help engineering teams identify issues that would otherwise be difficult or time-consuming to isolate.

The optimisation layer therefore supported the existing BMS and engineering team rather than replacing them, combining automatic energy reduction with better visibility of building behaviour.



What the project demonstrates

EXISTING BMS

Dynamic optimisation can be introduced through the installed BMS without a wholesale controls replacement.

MULTI-LET OFFICE

The approach can coordinate HVAC operation across a complex commercial office while maintaining occupant comfort.

ENGINEERING INSIGHT

Continuous operational data can help engineering teams target faults, maintenance and further efficiency opportunities.

Conclusion

One Trinity Gardens provides a strong commercial real-estate example of EcoAI working through an existing BMS to reduce both electricity and gas consumption, while also giving the engineering team greater visibility of HVAC performance and additional opportunities for improvement.

A practical commercial-property reference for dynamic HVAC optimisation in an existing multi-let office. EcoAI supports the existing engineering team and controls infrastructure while continuously improving HVAC operation.