

AJ Bush & Sons: 10MW Boiler Upgrade Funded by Energy Savings Certificates

Canonical: <https://northmoregordon.com/case-studies/aj-bush-sonsreduces-energy-costs-with-needed-upgrade/>

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Case-study summary

This historical case study records the project, delivery approach and reported results behind AJ Bush & Sons: 10MW Boiler Upgrade Funded by Energy Savings Certificates . It has been reorganised for clearer reading and linked to current Northmore Gordon guidance so the project evidence can be used without treating an earlier result as a present-day quote.

Evidence note: The source page is dated May 20, 2025. Figures, scheme names, equipment assumptions and client circumstances belong to that project period. Opportunities, targets and forecasts remain distinct from implemented or verified outcomes, and current eligibility should be checked before using the case as a new-project benchmark.

Project record

“Northmore Gordon worked alongside the boiler installation company as well as AJ Bush Manufacturing to complete the project. Northmore Gordon went above and beyond to get the project done and were able to work under difficult circumstances to make sure AJ Bush Manufacturing was able to access the credits for this project.”

Nick Lawrance

Plant Engineer

AJ Bush & Sons

The Client

AJ Bush & Sons (Manufactures) is Australia's largest east coast protein recovery provider operating rendering and manufacturing plants in NSW and QLD. The plants specialise in processing animal by-products for the meat/butchery industry. The NSW (Riverstone) plant's collection area, in addition to Sydney Metro, ranges from Nowra in the south to Canberra, Dubbo and Bathurst inland and up to Newcastle and Tamworth in the north. The material collected is recycled into products used for livestock, pet food, aquaculture, fertiliser and biofuels.

Key Facts

Equipment Upgraded: Gas-fired boiler (50y.o originally oil-fired)

Annual Energy Savings: 11,790 GJ A joule is a measure of the energy required to send an electrical current of one ampere through a resistance of one ohm for one second. One GJ is equal to 277.8 kilowatt hours (kWh), 1.055 million British thermal units (Btu) or 0.17 barrels of oil. p/a Opex: > \$80,000

Certificate Value: \$120,000

Project Payback Period: 15 Years

Program: NSW Energy Savings Scheme

Method: Installation of High-efficiency Appliances for Business (IHEAB)

The Project

AJ Bush Manufacturing Plant (NSW) operates 24/6 processing red meat and poultry by-products, making it extremely important that the boiler runs reliably and efficiently. An earlier energy audit in the plant identified a number performance improvements and highlighted the advantages of a boiler replacement. The plant had already made a number of services and repairs but it was determined the boiler was at the end of its serviceable life and the decision was made to replace the unit. The upgrade from the 7.3MW boiler to a new 10 MW boiler for extra capacity included many efficiency options including an economiser, oxygen trim, electronic air/gas ratio, and automatic TDS blowdown. Northmore Gordon is a leader in environmental certificate creation and trading. We have created the most certificates of all Accredited Persons under the Victorian Energy Upgrades program, an Accredited Certificate Provider in the NSW Energy Savings Scheme, and registered agent under the Federal Renewable Energy Target.

Challenges

Project was completed and done in conjunction with production as AJ Bush operates 24/6

Outcomes

7.3MW Gas boiler was replaced with 10MW boiler

Our Role

Northmore Gordon were engaged during the specification of the boiler and were able to calculate the value in energy saving certificates for various options (such as the economiser and blowdown controls). Working under Northmore Gordon's direction AJ Bush collected much of the evidence required to meet the NSW ESS. The ESS was established in 2009. Financial incentives are in the form of tradeable certificates, called energy savings certificates (ESCs). Generally, householders and businesses who fund energy savings activities transfer the right to create ESCs to Accredited Certificate Providers (ACPs) in return for a discount on the cost of the energy savings activity. The MWh savings from the project determines the number of ESCs that can be created. The ESS works by allowing ACPs to create and register ESCs for energy savings that are supported with appropriate evidence. ESCs are then purchased each year by mainly electricity retailers operating in NSW to meet their share of a legislated annual energy savings target. In addition Northmore Gordon provided a price hedge to protect against adverse changes in the certificate price during the finalisation of the claim and the audit process.

Founded in 1909 in Queensland, AJ Bush & Sons is a leading processor of animal by-products for domestic and export markets.

Using the results for a new project

Start with the site's current operating profile, asset condition and business objective. Define the baseline, project boundary, variables that affect energy use and the evidence available before selecting a technology or incentive pathway. This makes the comparison auditable and keeps physical savings separate from grants, certificate revenue and other financial benefits.

For a comparable project, confirm current program rules and product requirements, document installation and commissioning, and plan post-project measurement early. Historical results can show what was possible in one setting, but they do not establish current eligibility, pricing, payback or emissions outcomes.

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Why was boiler replacement the right choice for AJ Bush & Sons rather than other efficiency improvements?

An earlier energy audit identified multiple performance improvements, but AJ Bush's 50-year-old gas-fired boiler was at the end of its serviceable life. Rather than continue repairs, replacement offered both reliability and efficiency gains. The new 10MW boiler with features like an economiser, oxygen trim, and electronic air/gas ratio control delivered 11,790 GJ annual energy savings and \$80,000+ operational cost savings. This demonstrates how equipment replacement decisions should combine technical assessment of remaining life with efficiency analysis to justify capital investment.

How did Northmore Gordon help AJ Bush & Sons access NSW Energy Savings Scheme funding?

We calculated certificate value for different boiler options (including economiser and blowdown controls) under the NSW ESS Installation of High-efficiency Appliances for Business (IHEAB) method. The firm directed evidence collection to meet scheme requirements and provided a price hedge protecting against adverse certificate price changes during claim finalisation and audit. This dual approach—technical specification support combined with scheme pathway management—ensured the project could realise \$120,000 in certificate value.

What operational constraints did the AJ Bush & Sons boiler upgrade need to accommodate?

AJ Bush operates 24/6 processing animal by-products, meaning the boiler replacement had to proceed without disrupting production. This required careful coordination between the installation contractor and Northmore Gordon to ensure the new boiler ran reliably and efficiently throughout the upgrade. Operational continuity was critical because any unplanned shutdown would affect rendering schedules and downstream customers. Such constraints are common in manufacturing and should be made explicit in project planning to avoid cost overruns or completion delays.

What equipment features contributed to the energy savings in the boiler upgrade?

The new 10MW boiler incorporated four key efficiency measures: an economiser to recover heat from exhaust gas, oxygen trim to optimise fuel combustion, electronic air/gas ratio control for precise adjustment, and automatic TDS (total dissolved solids) blowdown to reduce water waste. Together, these delivered 11,790 GJ annual energy savings. When scoping boiler replacements, specify individual efficiency features separately so their contribution to savings can be verified and their certificate eligibility assessed under the applicable scheme method.

How should a manufacturing business evaluate whether a boiler is ready for replacement?

Begin with an energy audit to identify performance improvements and benchmark existing equipment against current standards. Document the equipment's age, maintenance history, and remaining serviceable life. Compare repair costs against replacement capital cost, factoring in reliability risk and production impact. For AJ Bush, the 50-year-old boiler's poor efficiency and unreliability made replacement economically and operationally justified. Combine this technical assessment with energy savings modelling and applicable scheme eligibility review before making the final investment decision.

Why is distinguishing energy savings from certificate value important in boiler upgrade business cases?

Energy savings (11,790 GJ annually) represent the physical efficiency improvement and generate operational cost savings (\$80,000+). Certificate value (\$120,000) reflects the scheme's willingness to pay for that verified saving under IHEAB method conditions. These are separate benefits that should be modelled independently. Certificate price can fluctuate, and scheme eligibility may change, so a project's commercial case should remain viable based on energy savings alone. Treating them separately ensures management can make informed decisions if incentive conditions shift.

What role does measurement and verification play in confirming boiler upgrade outcomes?

Energy savings claims under NSW ESS require documented evidence that the new boiler performs as specified. This includes commissioning records, baseline energy consumption before upgrade, post-upgrade consumption under comparable conditions, and operating assumptions (throughput, production hours, ambient conditions). Our direction of evidence collection ensured records met scheme audit standards. For animal processing and manufacturing, measurement boundaries must account for production variation so that efficiency improvements are not obscured by changes in throughput or product mix.

How does Northmore Gordon's price hedge protect a project like AJ Bush & Sons?

During the time between project completion and final scheme audit approval, certificate market prices can change, affecting the project's financial return. Our price hedge locked in a certificate value range, protecting AJ Bush against adverse price movements while the claim was finalised and audited. This risk-management service is particularly valuable for large claims (AJ Bush generated \$120,000 in certificates) where price volatility could materially impact payback. It allows management to finalise the business case with confidence.

What makes animal processing plants suitable candidates for boiler replacement projects?

Animal processing requires reliable, high-efficiency heating for rendering operations, hot water, and steam. These are continuous thermal demands that justify investment in equipment upgrades. Plants like AJ Bush, operating 24/6, face high energy costs and cannot afford boiler downtime. Replacing aging equipment offers both reliability and efficiency gains. Animal processing is an energy-intensive sector where we identify coordinated assessment of heat requirements, equipment performance, and funding pathways as essential to develop credible business cases for capital investment.