Final Report

AUSTRALIAN MEAT PROCESSOR CORPORATION

2021-1042 Service Insights, Reduction and Optimisation

Project code
2021-1042

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1.0 Abstract

Sustainability is an integral part of our company strategy and goes beyond regulatory compliance and bottom-line outcomes. Our objective is to lead our industry in the positive contribution we make to society, meeting the needs of all our stakeholders whether they be local, national or global. To demonstrate JBS Australia's commitment to sustainable business practices, the company has adopted a set of sustainability targets as part of the JBS S.A. global 2025 program. The targets cover key areas of sustainability including environment, team member health and safety, and animal welfare.

The 2025 sustainability targets for JBS Australia are:

- 15% reduction in water drawn intensity
- 12% reduction in greenhouse gas emissions intensity
- 4% reduction in energy use intensity
- 47% reduction in severe safety incidents
- Maintain compliance with the global Animal Welfare Scorecard

In order to achieve its sustainability goals, JBS is undergoing an entire business wide program to understand the energy and water consumption, identify critical points and equipment performance across the business to make informed decisions on improvements required. JBS Australia has 5 abattoirs and 5 feedlots in its northern business and 5 abattoirs 1 feedlot across its southern business that will be covered by this project.

2.0 Executive summary

This project aims to conduct full site mapping of core services across the JBS business. The initiative focuses on identifying critical usage points and assessing equipment performance to inform improvement strategies. Its objectives include reducing water and energy intensity, enhancing greenhouse gas performance, and embedding best practices across all processing facilities.

- Objectives
    - Identify and implement new technologies, process improvements and operating systems across the JBS business to meet JBS sustainability targets, reduce their environmental impact, reduce costs to operate and increase global competitiveness.
    - To identify each site's energy and water consumption, usage patterns and performance of major equipment and critical points across the production process.
    - Allocate suitable internal resources across the business to support the project oversite at each site, manage external contractor engagement and support the implementation of metering.
    - Implement a digital sub metering system to collect, collate and analysis critical data points across the business
    - Establish baseline data to allow accurate assessment of performance and develop insights into leakage/waste, improvement opportunities, schedule changes and future distribution investments required
    - Obtain data to inform environmental performance reporting for the JBS sustainability reporting and red meat processing sector as part of AMPC Environmental

Performance Review and Industry Sustainability Frameworks.

- Methodology
  The project will consist of 3 phases approach per site.
  Phase 1
    - Conduct site by site assessment of the water use, energy use and GHG emissions to identify critical use points, high use systems and resource intensive processes
    - Identify gaps in the data/reporting systems

  Phase 2
    - Implement sub-metering systems, develop and configure data monitoring and reporting in SCADA system and conduct system analysis to identify potential savings.
    - Select, purchase and install meters.
    - Configure data collection and reporting system

  Phase 3
    - Identify and review new technologies, process improvements and operating systems that will support the business to meet its objectives. Implement projects to improve productivity and reduce environmental impact in the use of water, energy and GHG emissions to meet JBS sustainability targets technologies.

- Results/key findings
    - The project has supported the business to achieve a comprehensive roll out of meters across key consumption points, allowed the business to improve its monitoring and become data driven to identify opportunities, implemented interventions to address water and energy usage and imbedded a culture of driving improvements to achieve JBS sustainability goals.

- Benefits to industry
    - The project has demonstrated with improved analysis of water, energy and gas inputs, improved sub-metering and site team focus on addressing savings there are significant opportunities to improve the usage of key service inputs. These learnings can be applied all business in the industry.

3.0 Introduction

The 2020-1042 Service Metering Project was launched to support JBS Australia's sustainability commitments by providing a detailed understanding of energy and water consumption across the business. The initiative focuses on identifying critical usage points and assessing equipment performance to inform improvement strategies. Its objectives include reducing water and energy intensity, enhancing greenhouse gas performance, and embedding best practices across all processing facilities.

The project has supported the business to achieve a comprehensive roll out of meters across key consumption points, allowed the business to improve its monitoring and become data driven to identify opportunities, implemented interventions to address water and energy usage and imbedded a culture of driving improvements to achieve JBS sustainability goals.

A significant driver in underpinning the success of the project is the way the sites have embraced the process and have embedded a culture of striving to make change. This has been supported through the development of site-based water and energy committees, which has seen the sites have a laser focus on striving to achieve reductions. The business utilises a weekly score card to monitor performance with a detailed action list by plant (Appendix 1) to drive focus on savings. Water and electricity KPIs are monitored weekly through this process. KPIs are reviewed weekly, with an additional water-focused meeting held every two weeks to maintain attention on these metrics and drive programs aimed at reducing usage.

4.0 Project objectives

The following table outlined the objectives of the project and how the outcomes delivered

Objective	Outcomes
Identify and implement new technologies, process improvements and operating systems across the JBS business to meet JBS sustainability targets, reduce their environmental impact, reduce costs to operate and increase global competitiveness.	**Achieved** – This project has allowed the business to better understand their usage of key services through benchmarking, analysis of data and site committees reviewing site performance. This has supported the business to implement better monitoring and reporting systems (supported by the SCADA reporting screens upgrade).
To identify each site's energy and water consumption, usage patterns and performance of major equipment and critical points across the production process.	**Achieved** – The first phase of the project involved each site conducting assessments of their current water, energy and GHG emissions. The sites were able to identify critical use points and review high use systems and resource intensive processes. These assessments were used to help set baselines and identify gaps in the sites monitoring systems and understand current metering locations and deficiencies.
Allocate suitable internal resources across the business to support the project oversite at each site, manage external contractor engagement and support the implementation of metering.	**Achieved** - Each site has used this project to implement site level committees focused on monitoring and addressing water and energy use. The teams have driven a culture of savings using the metering data to drive awareness and change.
Implement a digital sub metering system to collect, collate and analysis critical data points across the business.	**Achieved** – Through the review process key metering points were identified and metered. SCADA screens have been updated to track KIP's and identify issues in real time.

5.0 Methodology

This section should describe how the project was conducted, including experimental design(s), measurements, and statistical analysis.

Phase 1

- Conduct site by site assessment of the water use, energy use and GHG emissions to identify critical use points, high use systems and resource intensive processes
- Identify gaps in the data/reporting systems
- Review existing meters and reporting systems to identify improvements
- What is the impact on total site energy and water use?
- What are energy and water drivers?
- What value can be obtained from measuring & monitoring consumption?
- What is the complexity of monitoring required?
- Who are the staff at each location and what will be their responsibilities in this project?

Phase 2

- Implement sub-metering systems, develop and configure data monitoring and reporting in SCADA system and conduct system analysis to identify potential savings.
- Select, purchase and install meters.
- Configure data collection and reporting system
- Intense review for a 3-month period
- Quarterly high-level review for a total project monitoring period of 3 years.
- Establish baseline data to allow accurate assessment of performance and develop insights into leakage/waste, schedule changes and future distribution investments required.
- Identify and implement new technologies, process improvements and systems to reduce environmental impact in the use of water, energy and GHG emission to meet JBS sustainability targets

Phase 3

- Identify and review new technologies, process improvements and operating systems that will support the business to meet its objectives. Implement projects to improve productivity and reduce environmental impact in the use of water, energy and GHG emissions to meet JBS sustainability targets technologies. E.g. Mains pressure feasibility study and systems interventions, provision of real time data on utilities usage and auto alerts to the production team, recycling opportunities etc.

6.0 Results

The first phase of the project involved each site conducting assessments of their current water, energy and GHG emissions to identify critical use points and reviewing high use systems and resource intensive processes. These assessments were used to help set baselines and identify gaps in the sites monitoring systems and understand current metering locations and deficiencies.

Following this assessment phase, each site began the sub-metering process as part of phase 2 of the project. Meters have been installed across all 10 processing sites, with a total of 463 meters installed across the business. These include 272 Water meters, 187 Electrical meters and 4 Gas meters.

The sites have reviewed their usage and set baseline measurements, established committees to monitor and review progress. They have continued to better understand the savings opportunity and have been able to continue to target key savings areas by implementing new sub-meters.

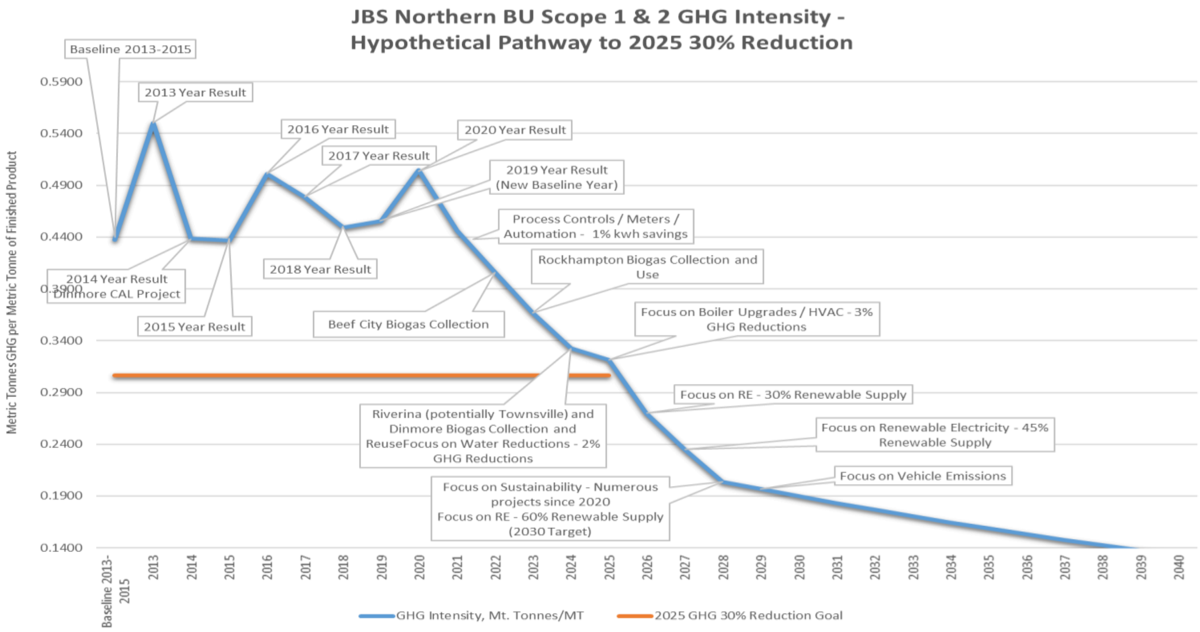
The project also facilitated a system update to the SCADA screens to collect relevant data from all sites to allow direct comparison of KPI's related to sustainability. As well as collecting, aggregating and providing data on utility use of water, coal, electricity, biogas and GHG emissions, it allows JBS to monitor and report operational influences that affect the consumption of these resources such as sectional downtime, render process and production throughputs in # of head and HSCW.

The site working committees and scorecard process has allowed the business to discuss the savings opportunities and review new technologies and process improvements that support the business. Some examples of process improvements and projects that have been conducted:

- Implemented **pressure reduction trials** using PRVs and VSDs.
- Boiler blowdown automation and condensate recovery projects initiated.
- Refrigeration efficiency improvements with VSDs and motor upgrades.
- Condensate recovery project for rendering and cooker systems.
- Roadmap developed for **net-zero energy and water goals**.
- Biogas capture project initiated for wastewater treatment.
- Steam metering at feedlot boilers for energy efficiency.
- Pinch analysis completed for water and energy savings.
- Cooker condensate recovery project scoped.
- VSD installed on handwash water pump.
- Focus on refrigeration audits and boiler blowdown automation.
- Installed water meters and mapped water usage.
- PRV trial for mains pressure reduction (partial success due to supply issues).
- Refrigeration efficiency project with VSDs.

Setting targets

Throughout 2021 both the northern and southern environment/sustainability committees have met to review the targets, identify the savings opportunities and set priorities for metering installations. As an example of the work these committees undertake, below is a chart of a hypothetical pathway to meet the 2025 targets. In addition to this, the committee reviews the energy, water and gas usages across all sites and discusses the progress of the metering projects and baseline data collection.



SCADA – Ignition environment monitoring screens

JBS is conducting a roll out of an updated SCADA Ignition system. Historically the control monitoring and data acquisition for the JBS sites have been quite diverse but limited in its ability to provide direct reporting and information that can utilized without manual input.

It has been identified that timely and accurate provision of information to area leaders is pivotal in the business decision making process. The identification and monitoring of KPI's for sustainability and process management is required and the collected data must be analysed and presented/reported in a form best able to be utilized.

- Real time identification of deviation from business goals or significant issues that can impact site
- Opportunities for business improvement
- Periodic automatic reporting of general compliance and 'health' of key sections within the business.

The new Ignition platform is being used as the foundation for improved reporting, allowing us to streamline processes and improve accuracy of reporting. A principal component of this project is the introduction and integration of a modern management dashboard that will utilise real time utilities, site processes and production data.

As part of the service metering project, reporting screens have been developed to support real time monitoring of critical business areas to monitor key environment metrics. The new screens will collect relevant data from all sites to allow direct comparison of KPI's related to sustainability. As well as collecting, aggregating and providing data on utility use of water, coal, gas, electricity, biogas and GHG emissions it will also monitor and report operational influences that affect the consumption of these resources like sectional downtime, render process and production throughputs in # of head and HSCW.

Service Meter installations

Following the target setting each site identified priority meters for instillation as part of this project. Priority meters continue to be installed across all JBS sites. The below table sets out a summary of all the meters installed during the project.

Summary of meters installed

Business Unit	Site	Water	Electrical	Gas	Grand Total
Northern Feedlots	Riv Feedlot	4			4
Northern Feedlots Total		**4**			**4**
Northern Plants	Beef City	12	27		39
	Dinmore	37	52	3	92
	Riverina	34	20		54
	Rockhampton	8	22	1	31
	Townsville	16	29		45
Northern Plants Total		**107**	**150**	**4**	**261**
Southern	Bordertown	13	23		36
	Brooklyn	18	8		26
	Brooklyn - Beef	70	2		72
	Brooklyn Sheep	18			18
	Longford	26	4		30
	Scone	16			16
Southern Total		**161**	**37**		**198**
Grand Total		**272**	**187**	**4**	**463**

Water results

Across the business a significant focus has been on water savings. Most of the meters installed during the project have been utilised in the water space, allowing the business to focus in on these savings. The below table highlights the achievements to date. Details site summaries are shown in Appendix 2.

BU	**Baseline (2021)**	**2024 YTD**	**2025 YTD**	**YTD Reduction**	**Target 2025**
Northern	2.5 kL/Hd	2.2 kL/Hd	2.0 kL/Hd	0.2 kL/Hd - Down 10%	1.9 kL/Hd
Southern	3.0 kL/Hd	2.3 kL/Hd	2.3 kL/Hd	Down 3%	2.2 kL/Hd

7.0 Discussion

The project has seen a significant cultural shift, at the sites, with local teams striving to drive improvements in the service areas. This project has been a catalyst for change and has enabled the business to better track and ability to drive interventions to improve our water, energy and gas usage. With ongoing monitoring and reporting on these areas of the business now embedded at the sites we will continue to see ongoing improvements.

Strategic Learnings

- Real-time monitoring enables proactive management – moving from reactive to predictive control improved efficiency and reduced waste.
- Integration of metering solutions and improved monitoring systems results in savings
- The project combined metering insights with targeted interventions accelerated progress toward sustainability targets.
- Culture is Key – Continuous engagement and accountability at all levels ensured lasting improvements.

8.0 Conclusions

JBS Australia as implemented a series of sustainability targets aligned with our global business. These targets encompass critical sustainability areas, including environmental stewardship, team member health and safety, and animal welfare.

The 2025 sustainability targets set by JBS Australia are as follows:

- 15% reduction in water withdrawal intensity
- 12% reduction in greenhouse gas emissions intensity
- 4% reduction in energy use intensity
- 47% reduction in severe safety incidents
- Ongoing adherence to the global Animal Welfare Scorecard

To achieve these goals, JBS has initiated a comprehensive Service Metering project designed to monitor and manage energy and water consumption, reduce resource intensity, enhance greenhouse gas performance, and promote best practices across all processing sites. The project involved installing meters at key locations, enabling data-driven monitoring and interventions to support sustainability goals.

A key factor in the project's success has been active site engagement, including the formation of site-based water and energy committees focused on reducing usage. Performance is tracked weekly using scorecards and KPIs for water and electricity, with regular reviews to ensure targets are met.

The project began with site assessments to identify critical usage points and gaps in monitoring, leading to the installation of 463 meters (272 water, 187 electrical, 4 gas) across 10 sites. Ongoing monitoring and additional sub-metering have helped target further savings. The project also upgraded SCADA systems to aggregate utility data—water, coal, electricity, biogas, and GHG emissions—enabling direct comparison of sustainability KPIs and detailed reporting on operational factors affecting resource consumption.

9.0 Recommendations

- Expand metering coverage to additional usage points.
- Continue leveraging SCADA dashboards for real-time decision-making.
- Share best practices through AMPC programs to drive sector-wide adoption.
- Continue to invest in automation and advanced control systems for resource optimisation.

10.0 Appendices

10.1 Appendix 1 – Scorecard

JBS Scorecard - Northen Plants

Period: Week 48

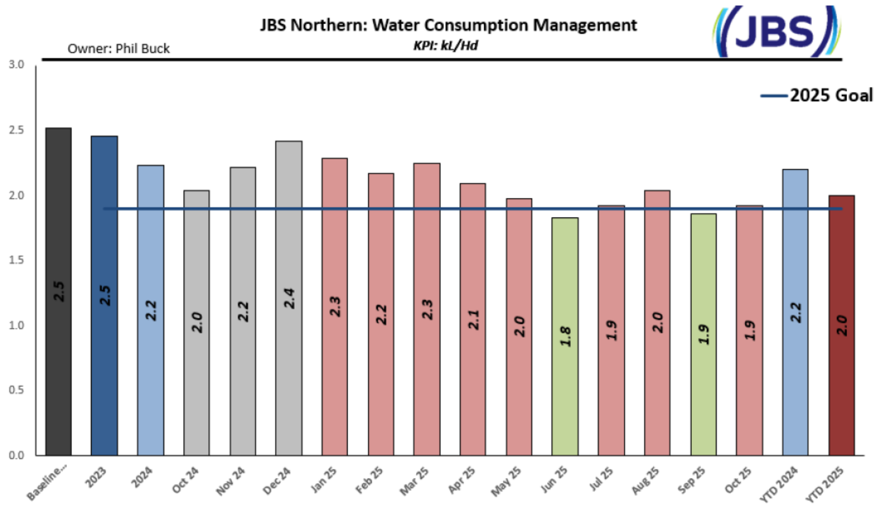
KPI	Best	Beef City Actual	Beef City Target	Beef City YTD	Beef City Target	Dinmore Actual	Dinmore Target	Dinmore YTD	Dinmore Target
Volume	▲	99.9%	98.0%	103.3%	98.0%	94.7%	98.0%	92.1%	98.0%
Offal $/Hd	▲	$298.0	$250.2	$273.2	$250.2	$171.8	$146.2	$171.8	$146.2
Primal $/Hd	▼	-$42.76	-$45.10	-$45.81	-$45.10	-$33.38	-$36.10	$155.80	-$36.10
Sub Primal $/Hd	▼	-$28.19	-$35.50	-$20.61	-$35.50	-$16.02	-$21.80	-$37.48	-$21.80
Labour Cost $/Hd	▼	$330.1	$288.7	$293.0	$288.0	$312.4	$248.3	$299.2	$246.6
Packaging Cost $/Hd	▼	$33.57	$30.30	$31.51	$30.23	$26.57	$23.00	$24.93	$23.08
Supplies Cost $/Hd	▼	$13.28	$8.50	$10.79	$8.42	$9.62	$8.83	$7.38	$8.57
Claims $/Hd	▼	$0.00	$0.20	$0.54	$0.20	$1.17	$0.69	$0.93	$0.69
Turnover	▼	0.28%	0.40%	0.35%	0.40%	0.40%	0.40%	0.62%	0.40%
Unplanned Leave	▼	6.30%	6.50%	6.70%	6.50%	8.50%	6.50%	9.31%	6.50%
Severe Injury	▼	0.00	0.17	0.09	0.22	0.00	0.17	0.05	0.17
Water Usage	▼	2.11	2.20	2.12	2.20	1.70	1.70	1.71	1.70
Electricity	▼	0.16	0.23	0.19	0.23	0.28	0.27	0.26	0.27
Tallow - FFA (%)	▼	0.90%	1.00%	0.99%	1.00%	0.78%	1.00%	0.85%	1.00%
MBM Protein (%)	▼	50.8%	52.0%	50.2%	52.0%	52.2%	52.5%	52.6%	52.5%
MBM Moisture (%)	▼	3.2%	5.0%	4.0%	5.0%	2.1%	5.0%	2.5%	5.0%
Availability Harvest	▲	92.4%	98.0%	97.0%	98.0%	89.3%	98.0%	93.6%	98.0%
Availability Fab	▲	86.2%	98.0%	98.5%	98.0%	95.1%	98.0%	96.9%	98.0%
Schedule Load	▲	105.0%	80.0%	84.1%	80.0%	71.0%	80.0%	76.9%	80.0%
Total Confirmation	▲	89.0%	80.0%	76.9%	80.0%	70.0%	80.0%	64.1%	80.0%
Schedule Compliance	▲	74.0%	80.0%	82.0%	80.0%	78.0%	80.0%	64.6%	80.0%
R&M Cost	▼	$31.00	$19.95	$33.92	$26.32	$32.00	$16.86	$32.36	$23.67

KPI	Best	Riverina Actual	Riverina Target	Riverina YTD	Riverina Target	Rockhampton Actual	Rockhampton Target	Rockhampton YTD	Rockhampton Target
Volume	▲	103.8%	98.0%	105.5%	98.0%	100.8%	98.0%	100.5%	98.0%
Offal $/Hd	▲	$312.1	$264.9	$286.4	$265.1	$158.7	$138.1	$147.6	$138.1
Primal $/Hd	▼	-$31.00	-$51.50	-$46.11	-$51.50	-$14.35	-$34.70	-$26.62	-$34.70
Sub Primal $/Hd	▼	-$28.93	-$66.10	-$38.98	-$66.10	$1.73	-$22.20	-$15.99	-$22.20
Labour Cost $/Hd	▼	$308.4	$290.4	$306.7	$285.6	$242.9	$233.7	$246.9	$229.8
Packaging Cost $/Hd	▼	$37.32	$36.14	$37.43	$36.01	$21.05	$21.02	$21.65	$21.07
Supplies Cost $/Hd	▼	$11.58	$10.00	$9.59	$9.91	$9.64	$6.50	$7.72	$6.50
Claims $/Hd	▼	$0.11	$0.68	$0.47	$0.68	$0.99	$0.18	$0.42	$0.18
Turnover	▼	0.22%	0.46%	0.70%	0.46%	0.60%	0.57%	0.81%	0.57%
Unplanned Leave	▼	5.20%	6.50%	5.49%	6.50%	5.80%	6.50%	5.74%	6.50%
Severe Injury	▼	0.00	0.17	0.04	0.22	0.00	0.17	0.00	0.22
Water Usage	▼	2.26	2.50	2.65	2.50	0.77	1.60	1.54	1.60
Electricity	▼	0.15	0.16	0.16	0.16	0.22	0.19	0.20	0.19
Tallow - FFA (%)	▼	0.50%	1.00%	0.49%	1.00%	0.64%	1.00%	0.53%	1.00%
MBM Protein (%)	▼	49.1%	52.5%	49.3%	52.5%	51.2%	52.5%	49.1%	52.5%
MBM Moisture (%)	▼	6.8%	5.0%	6.2%	5.0%	3.5%	5.0%	3.9%	5.0%
Availability Harvest	▲	98.3%	98.0%	98.0%	98.0%	100.0%	98.0%	98.6%	98.0%
Availability Fab	▲	98.6%	98.0%	98.6%	98.0%	100.0%	98.0%	99.6%	98.0%
Schedule Load	▲	82.0%	80.0%	83.8%	80.0%	83.0%	80.0%	82.6%	80.0%
Total Confirmation	▲	64.0%	80.0%	76.3%	80.0%	105.0%	80.0%	97.3%	80.0%
Schedule Compliance	▲	88.0%	80.0%	90.0%	80.0%	90.0%	80.0%	89.2%	80.0%
R&M Cost	▼	$4.02	$33.57	$35.96	$33.27	$14.16	$14.05	$23.74	$24.31

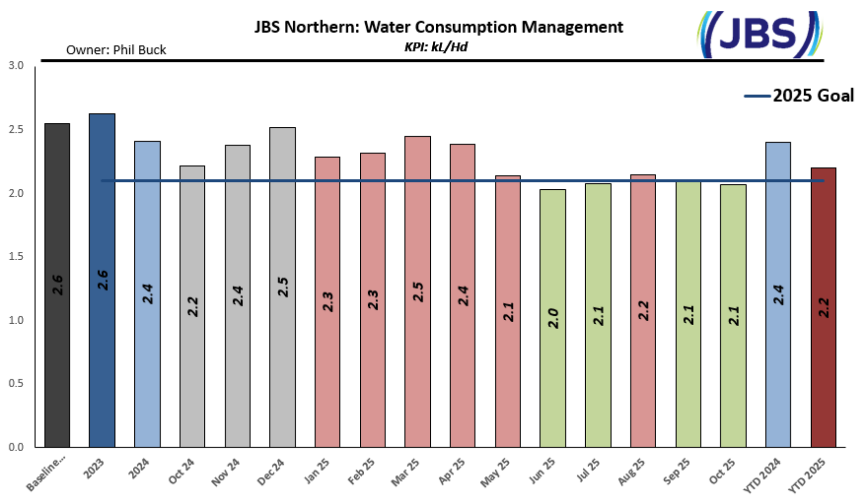
KPI	Best	Townsville Actual	Townsville Target	Townsville YTD	Townsville Target
Volume	▲	124.0%	98.0%	107.1%	98.0%
Offal $/Hd	▲	$162.9	$132.0	$141.6	$132.0
Primal $/Hd	▼	-$11.74	-$29.20	-$2.62	-$29.20
Sub Primal $/Hd	▼	-$0.17	-$10.40	-$6.46	-$10.40
Labour Cost $/Hd	▼	$237.9	$226.8	$248.4	$230.0
Packaging Cost $/Hd	▼	$22.30	$19.02	$19.16	$19.63
Supplies Cost $/Hd	▼	$14.94	$8.71	$10.51	$8.93
Claims $/Hd	▼	$0.00	$0.23	$0.14	$0.23
Turnover	▼	1.38%	0.71%	0.81%	0.71%
Unplanned Leave	▼	9.60%	7.50%	7.81%	7.50%
Severe Injury	▼	0.00	0.17	0.05	0.22
Water Usage	▼	2.20	1.90	2.29	1.90
Electricity	▼	0.19	0.20	0.24	0.20
Tallow - FFA (%)	▼	1.80%	1.00%	1.69%	1.00%
MBM Protein (%)	▼	50.5%	52.0%	51.0%	52.0%
MBM Moisture (%)	▼	3.2%	5.0%	2.7%	5.0%
Availability Harvest	▲	92.8%	98.0%	96.0%	98.0%
Availability Fab	▲	95.0%	98.0%	99.5%	98.0%
Schedule Load	▲	84.0%	80.0%	82.6%	80.0%
Total Confirmation	▲	70.0%	80.0%	81.6%	80.0%
Schedule Compliance	▲	94.0%	80.0%	89.1%	80.0%
R&M Cost	▼	$33.12	$116.80	$38.39	$38.50

10.2 Appendix 2 – Water Results

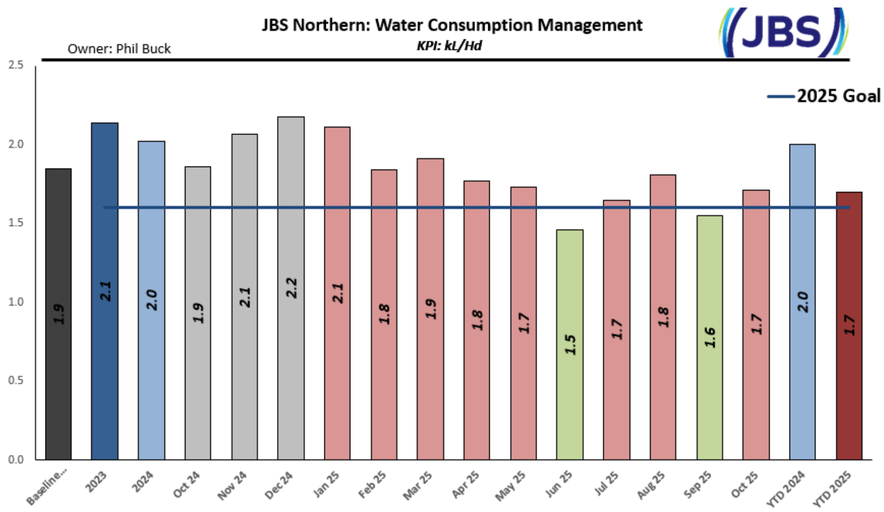
Northern overview



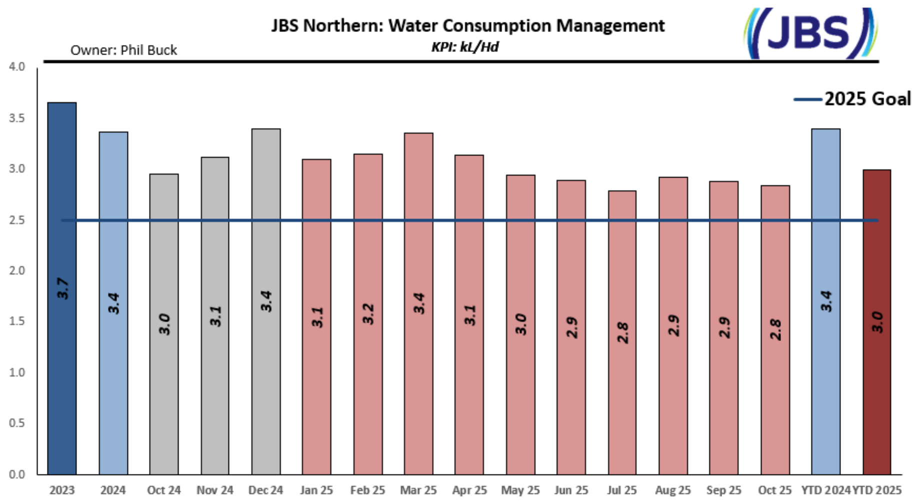
Beef City



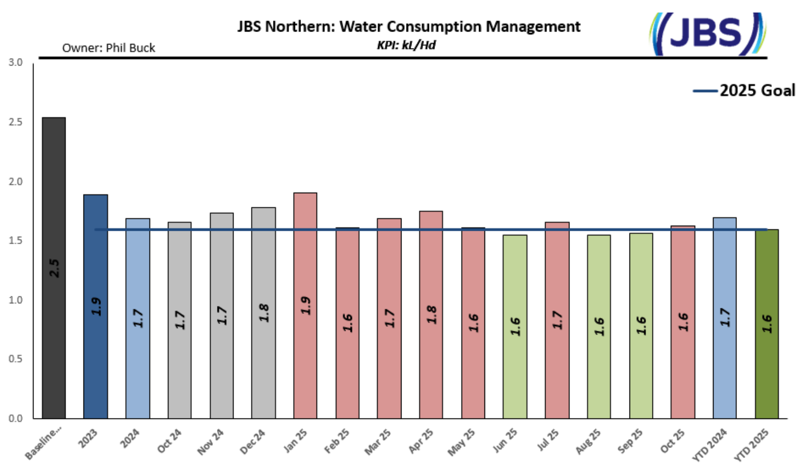
Dinmore



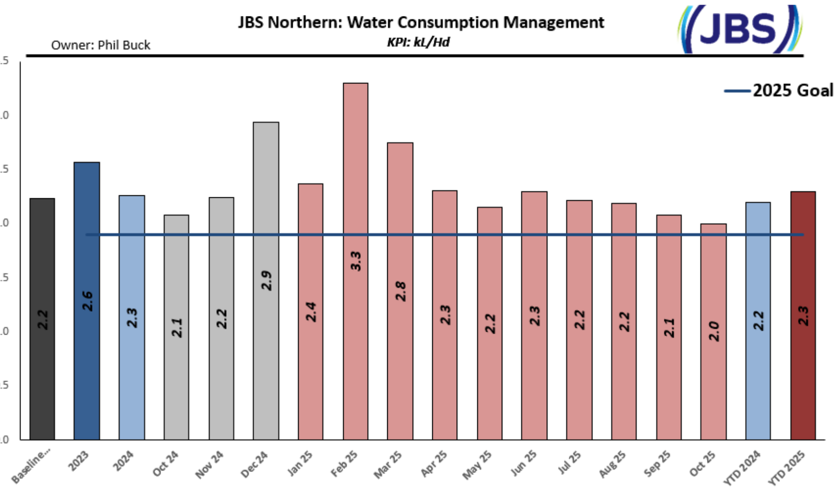
Riverina



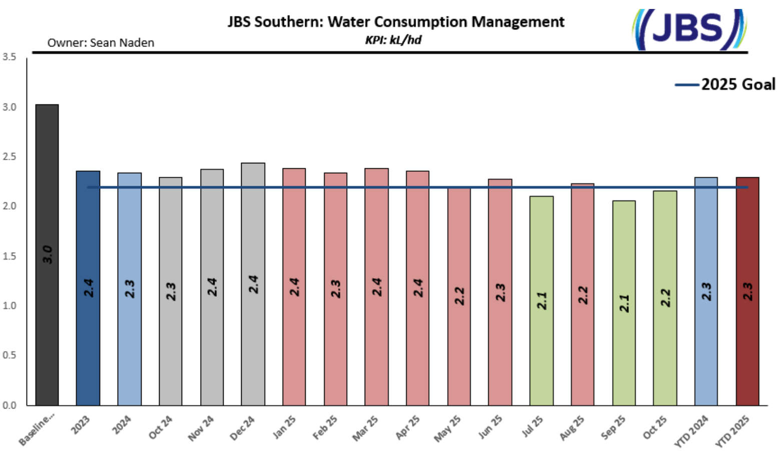
Rockhampton



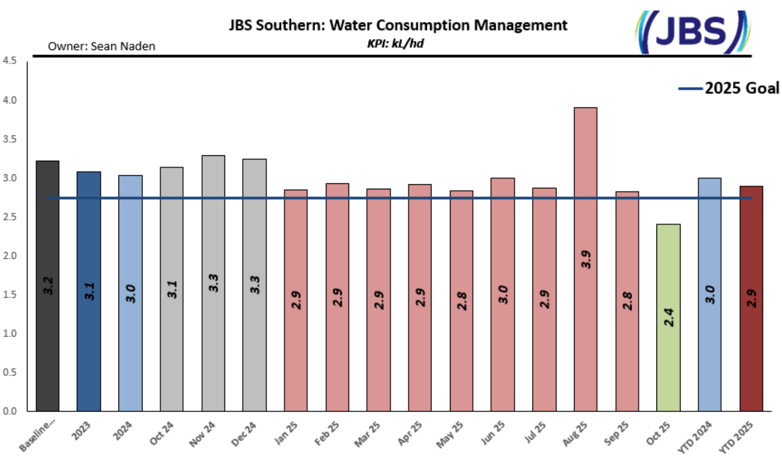
Townsville



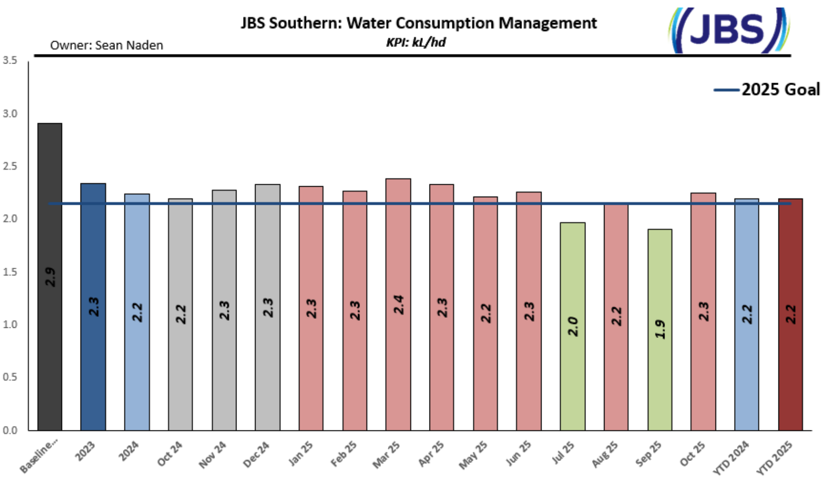
Southern overview



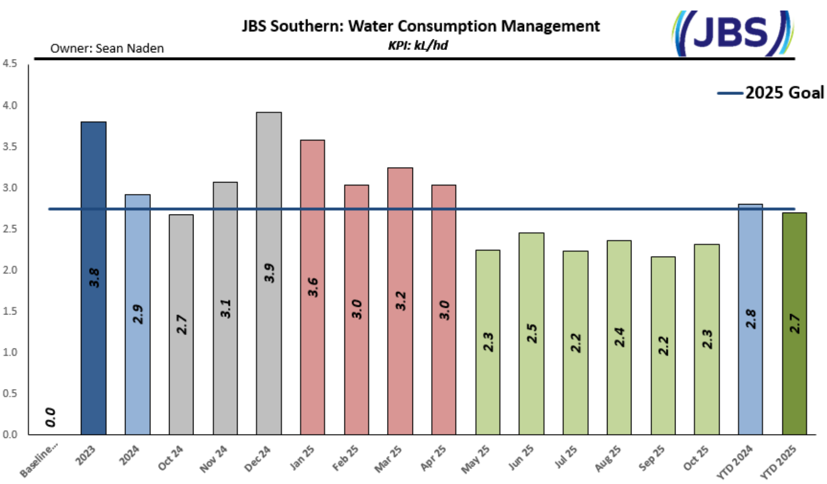
Bordertown



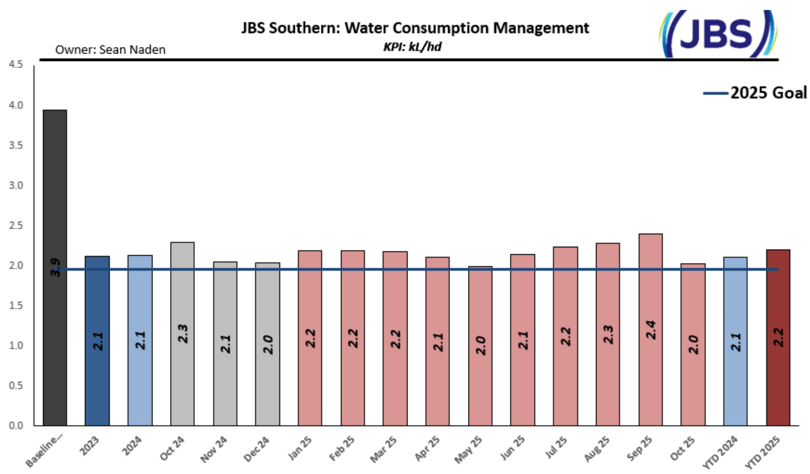
Brooklyn



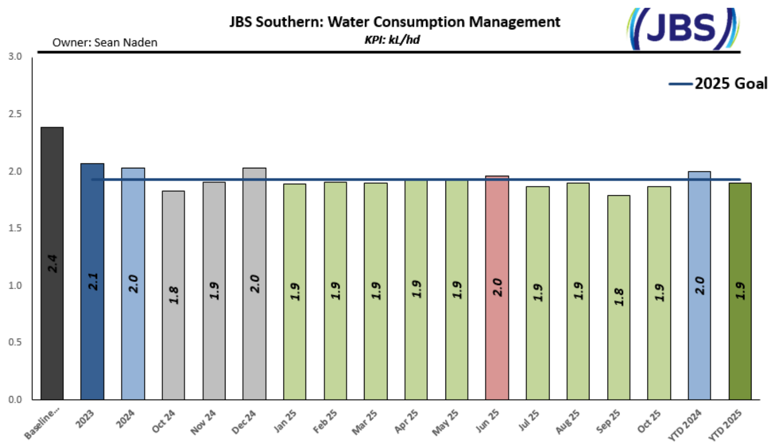
Cobram



Longford



Scone


JBS Southern: Water Consumption Management
KPI: kL/hd
Owner: Sean Naden
JBS
2025 Goal
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2.4
2.1
2.0
1.8
1.9
2.0
1.9
1.9
1.9
1.9
1.9
2.0
1.9
1.9
1.8
1.9
2.0
1.9
Baseline...
2023
2024
Oct 24
Nov 24
Dec 24
Jan 25
Feb 25
Mar 25
Apr 25
May 25
Jun 25
Jul 25
Aug 25
Sep 25
Oct 25
YTD 2024
YTD 2025