AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

POC Processing Facilities

Toustone Data Proof of Concept for Meat Processing Facilities (Stage 1)

Contents

1.0 Executive Summary

The Red Meat Processing data like many industries collects vast varieties and amounts of data across their operations. Understanding and utilising the power of the collected data can be achieved through the use of business intelligence applications. For a company focused on their day-to-day operations, finding the strategic space and funding to begin their business intelligence journey can be daunting. AMPC in funding this project has provided the opportunity for 10 processing plants to solve a data problem, experience the potential of business intelligence, access the expertise of data specialists, and develop a BI pathway with very little expense to themselves besides the investment of time.

The project aimed to work with individual companies to develop a proof of concept (POC) that met the needs of the individual processing plant, focusing on an area of reporting need. At the completion of the POC the company was provided with the choice of moving the POC outcomes in a production environment and continuing to access the business intelligent tool developed by Toustone.

Each plant that participated was given the opportunity to submit a PIP application to further develop and deliver additional BI dashboards based upon the identified needs of the individual processor.

Each processor was offered the following opportunities and was able to decide at any stage to proceed or abort the project.

Only one processor was unable to proceed to the POC due to insufficient data availability. A further 6 processors completed POCs with one processor accessing two funding allocations due to the size of the POC undertaken. 2 of the participating processors successfully applied for PIP funding to continue their BI journey with one entering their second phase after a PIP funding phase 1.

In total, 8 POC finding allocations were accessed by red meat processors across Australia. Each was customised to the unique needs of each organisation and analysing and integrating data from various sources. The reporting explored workforce data including learning and development and Incidents, energy, utilities and temperature analysis, sales, and pricing analysis, as well as production, yield and offal reporting. A summary of the POCs completed is provided below.

Processor	Location	Reporting Areas	PIP Applications
Processor 1	Victoria	Insufficient data for analysis and development of an app for the collection of data did not have the necessary ROI to proceed	None
Processor 2	New South Wales	Incident Reporting	Potential options discussed but none submitted
Processor 3	New South Wales	Yield Reporting	Potential options discussed but none submitted

Processor 4 & 5	Australian Wide	Workforce Learning and Development	Potential options discussed but none submitted
Processor 6	Victoria	Energy Management	One PIP application approved
Processor 7	Western Australia	Production, Temperature and Utilities Reporting	Potential options discussed but none submitted
Processor 8	Tasmania	Sale, Offal and Price Analysis	One PIP application approved and completed.

The benefits experienced by industry because of this project has included:

- Recognition of the need for strategic approach to data collection and analysis.
- Greater understanding of the data available in the industry and the data problems facing meat processes.
- Opportunities to explore the benefits business intelligence reporting can offer an organisation.

2.0 Introduction

As an industry we collect a vast range of data on many fronts, some companies have systems to analyse the data, whilst others are still collecting data for the sake of collecting data. Repeatedly we hear pros and cons around the use and integration of data, but the vast majority admit that their systems are 'clunky' or not streamlined.

This project's aim is to work with individual companies to develop a proof of concept (POC) that meets the needs of the individual processing plant, focusing on an area of reporting need. At the completion of the POC the company is provided with the choice of moving the POC outcomes in a production environment and continuing to access the business intelligent tool developed by Toustone. A total of 10 POC's were offered but this was later reduced to 8 with a variation to the contract.

Each plant that participated was given the opportunity to submit a PIP application to further develop and deliver additional BI dashboards based upon the identified needs of the individual processor.

3.0 Project Objectives

3.1   Develop a Proof of Concept for up to 10 processing businesses with the aim to get five businesses to them take up the PIP opportunity to further utilize the BI tool

3.2   Provide supporting information that feeds into AMPC project 2021-1124 Data Metric Baseline Establishment   to help understand the key Metric processing companies are wishing to analyse

3.3   This project may lead to a greater uptake in PIPs around data collection i.e. the energy insights

4.0 Methodology

Each plant will be offered the following opportunity and can decide at any stage to proceed or abort the project.

1. Presentation: Introduction, Demo, Standard metrics, POC concept, PIP process
2. Agree on POC: Draw down on core project, Report to AMPC
3. Send Plant PIP template: On agreement submit PIP for approval, this may be before or after finish of POC depending on plant
4. Finish POC: Go/No Go for project
5. PIP approved: Dev sprint 1 starts
6. 1st Sprint Finished
7. Go/No Go
8. 2nd Sprint Starts…

5.0 Project Outcomes

In total, 8 proofs of concept were undertaken for red meat processors across Australia. Each was customised to the unique needs of each organisation and analysing and integrating data from various sources. The reporting explored workforce data including learning and development and Incidents, energy, utilities and temperature analysis, sales and pricing analysis, as well as production, yield and offal reporting.

Processor 1

Processor 1 was the first proof of concept commenced. Extensive time was spent scoping the requirements and undertaking a data gap analysis. Unfortunately, it was determined that there was insufficient data available to undertake the proof of concept. A number of proposals were discussed, and funding sought to develop an application to collect the required data but the return on investment was not sufficient to justify the investment as a stand-alone project relative to the size of their operations.

Processor 1 determined the POC was a 'No-Go' and no further development was undertaken. Despite not proceeding, Toustone, AMPC and Processor 1 were all able to take away learnings from the process.

Processor 2

Processor 2 undertook a proof of concept with Toustone examining the benefits of Business Intelligence reporting for their incident reporting. Focus for Processor 2 was to understand number and type of injuries along with trends and additional details.

Discussions explored potential for additional areas of business intelligence for which PIP funding could be applied but Processor 2 determined that further development at the time was not possible with or without PIP funding.

Processor 3

Processor 3 undertook a proof of concept (POC) with Toustone examining the benefits of Business Intelligence reporting for their yield. The yield dashboards present daily data by processing site, room, station and shift, animal type, and product type as well as kill summary by sale and chiller and condemn summary by reason. Summaries include aggregated graphs as well as tables for additional details and are filterable by date, site, room, type, and town.

The discussion identified a number of areas of interest, but Processor 3 have determined further development at the time is not possible with or without PIP funding.

Processor 4/5

Processor 4/5 accessed two 2 POC funding slots effectively being Processor 4 and 5. Their proof of concept with Toustone examined the benefits of Business Intelligence reporting for workforce learning and development reporting. It was exploratory in nature without a firm scope choosing instead to explore the potential the data had to provide insights and adjusting as the business required upon data presentation. The size of the project was determined to be too large for one allocation of POC funding so through agreement, two funding allocations were made available through the project.

The reporting potential of the dashboard was recognised and the need for a strategy to determine business and decision intelligence moving forward was identified. Such strategic planning would be necessary prior to any application for PIP funding to support further business intelligence reporting.

Processor 6

Processor 6 undertook a proof of concept with Toustone examining the benefits of Business Intelligence reporting for their Energy Management. Focus for Processor 6 was to monitor energy usage, both used and produced, the variable gas spot prices and enable quick management decisions around the combination of energy used each day. The reporting also supported Processor 6's ISO5001 requirements.

The POC dashboard was well received and its benefits including supporting future PIP projects is growing momentum within the organisation. PIP funding for machine learning modelling to improve energy usage predictions has been secured and development will commence shortly.

Processor 7

Processor 7 undertook a proof of concept with Toustone examining the benefits of Business Intelligence reporting for their Production, utilities, and temperature reporting. A focus for Processor 7 was analysing production weights, and fat scores, temperature readings and electricity, water, and gas usage by time of use. Production reporting examined weight and fat scores by time providing insights into peak production time.

The POC dashboard was well received and its benefits including support for future PIP projects explored. Further development opportunities are still in conversation awaiting the most appropriate time to pursue.

Processor 8

Processor 8 undertook a proof of concept with Toustone examining the benefits of Business Intelligence reporting for their Sales reporting, pricing analysis and offal reporting. The sales and pricing dashboard explored sales in dollars

and weight by customer, product, state, and production location. Offal reporting detailed weight and price by cut/product with totals for lost revenue.

The POC dashboard was positively received by Processor 8 managers. Access was provided to showcase the dashboards throughout the organisation and interest in further reporting areas identified. Processor 8 accessed PIP funding to undertake further decision intelligence with phase one completed June 2023 and phase 2 set to commence with the new financial year.

POC's for 2 more processors were not secured within the timeframe of the project and a project variation was submitted to remove them from scope.

6.0 Discussion

Processor 2

For Processor 2, data governance and integrity were a challenge as much of it was manually collated in excel reports. The business intelligence reporting solution was able to easily highlight where data was missing (e.g. Body Part not being defined in an incident record) making data integrity easier to manage moving forward. A further enhancement for future reporting would be to undertake a data quality audit and put into place structured data governance protocols.

While a lot of this reporting was already available independently, the POC demonstrated the power of bringing together multiple data sources and automating reporting views which allowed oversight of the full data spectrum and drillable insight to detail as required. Previously users would spend a number of hours to build this type of reporting and link it with other data sources each month.

The scalability of the environment was demonstrated and recognition of the value to all reporting areas of the business captured, providing consistency and future proofing reporting needs as the business grows in both size and complexity.
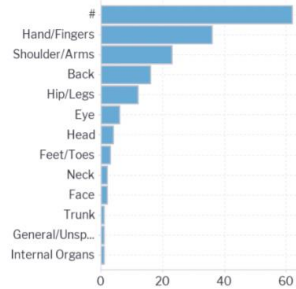
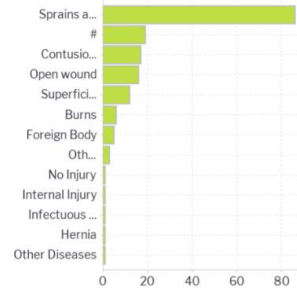Examples of incident reporting developed for Processor 2 are below.

Share

Minor Incidents
84

Equip / Enviro Incidents
8
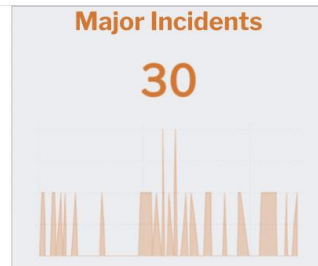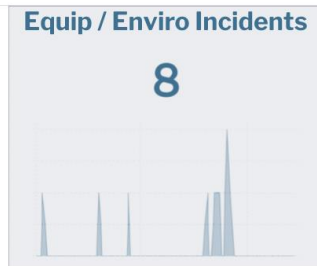
Major Incidents
30

Incidents by Department
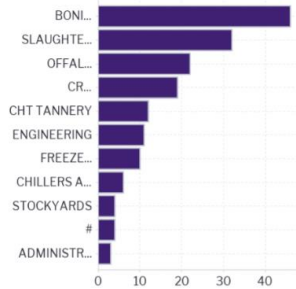
Incidents by Body Part

Incidents by Nature of Injury

Filters

Incident Date
Between

Today Minus 12 Months ⌄

Body Part
In List
Select

Department Description
In List
Select

Department Section
In List
Select

Equipment Description
In List
Select

Incident Type
In List
Select

Nature of Injury
In List
Select

Monthly Summary

| Month		Total Unique Departments Impacted		Total Unique Equipment Impacted		Total Unique Body Parts		Total Unique Nature of Injuries		Minor Incidents		Equipment or Environment Incidents		Major Incidents	
01 Feb 2021		10		10		10		9		22		1		7	
01 Mar 2021		9		9		8		10		21		2		2	
01 Apr 2021		9		7		6		7		15		0		11	
01 May 2021		9		14		7		7		18		5		5	

Processor 3

For Processor 3, the focus was on gaining visibility of yield results at a base level, that is per day by room. This was achieved through the production of Business Intelligence Dashboards for each room. The D-CFAB or Cold Fabrication Room dashboard is shown below.
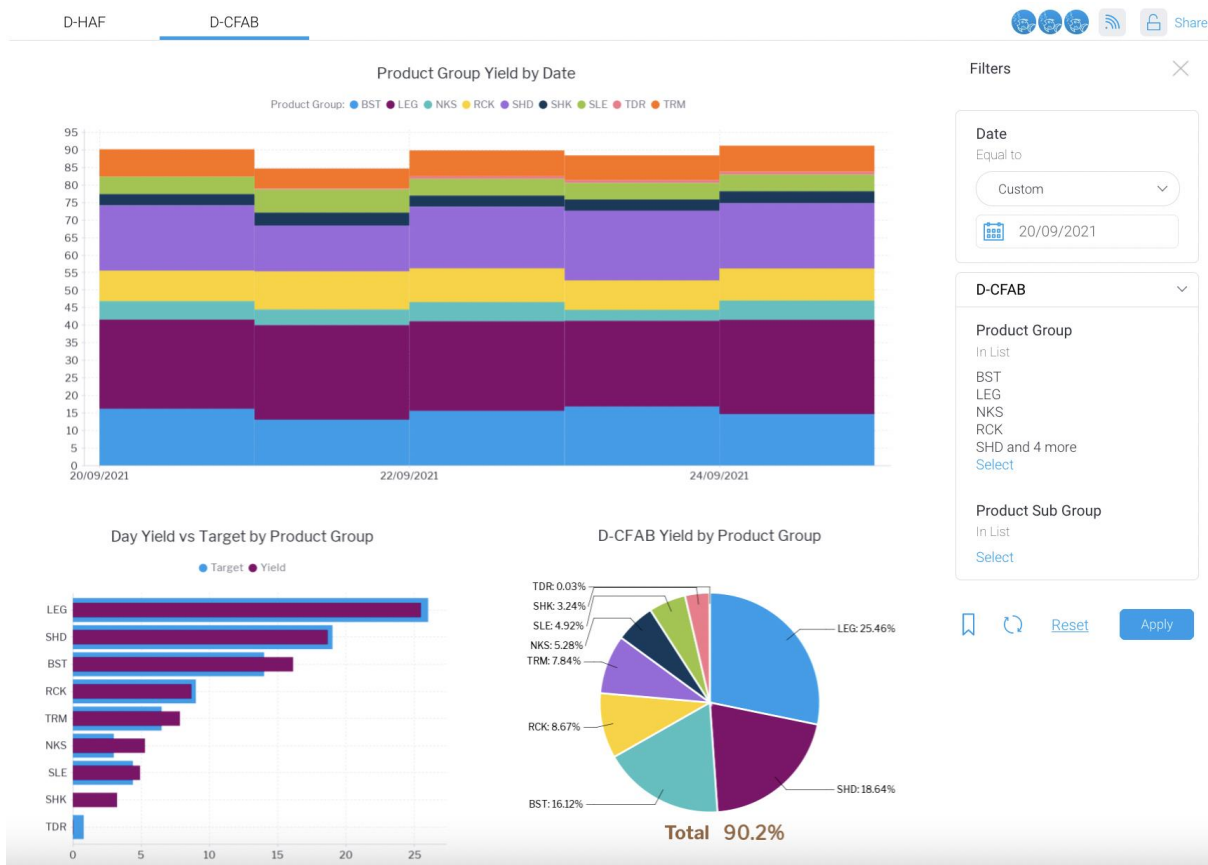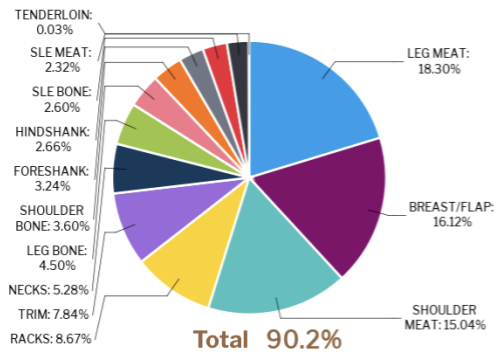

Further detail is displayed at the Sub-Product level and then via a drill through to the daily yield details.

Day Yield vs Target by Product Sub Group
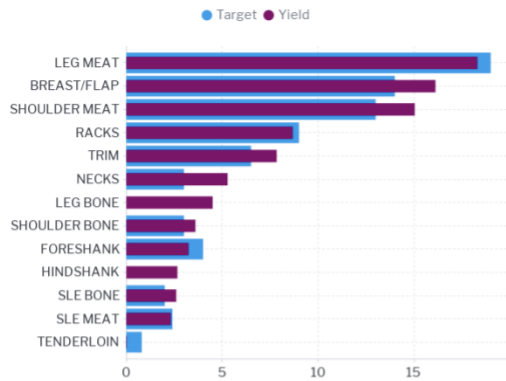
D-CFAB Yield by Product Sub Group

Total 90.2%

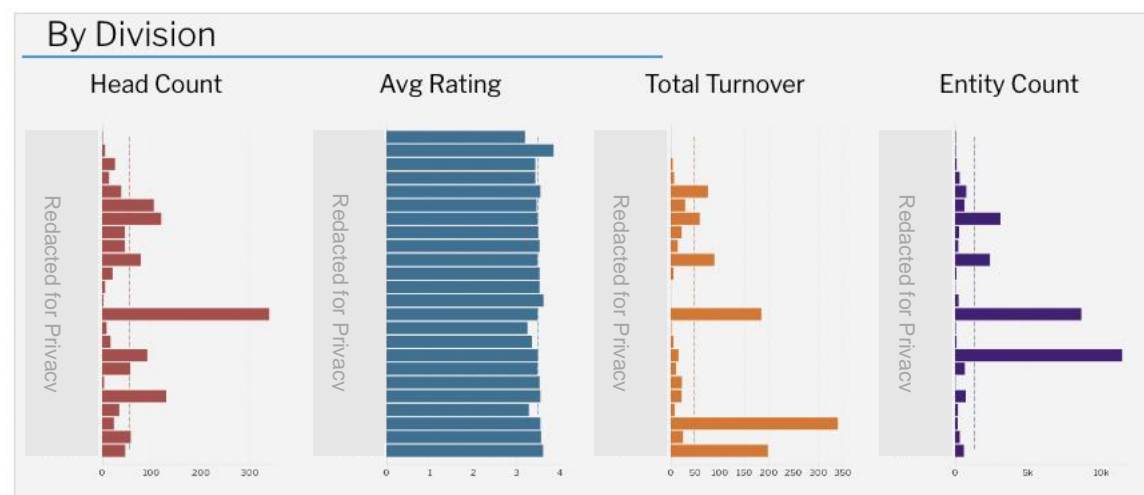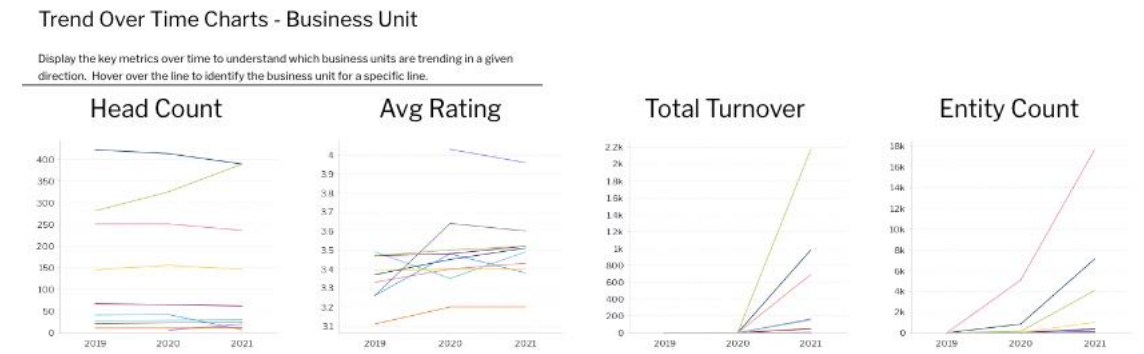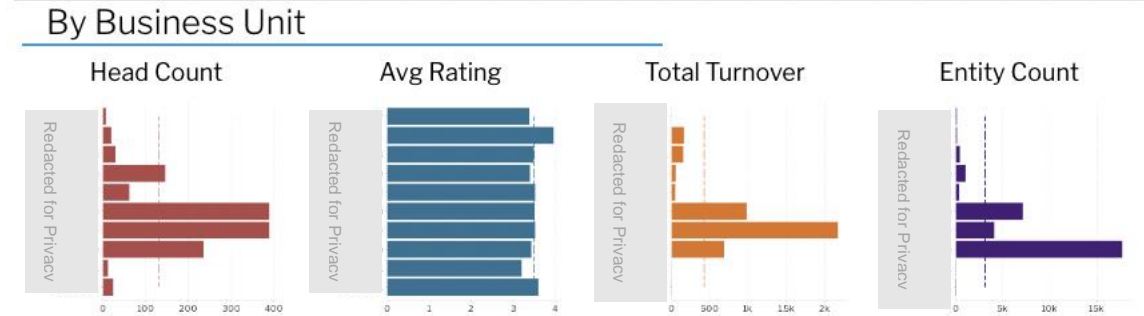| Product Group	Product Sub Group	Product Code	Product Description	Cartons	Weight	Yield	Avg per Carton
BST	BREAST/FLAP	P24	FROZEN BONE IN LAMB FLAP PIECES LP MS	334	5,751.18	16.12	17.22
LEG	HINDSHANK	B252	FROZEN BONELESS LAMB HINDSHANK MS	24	557.04	1.56	23.21
LEG	HINDSHANK	W458	CHILLED BONELESS LAMB HEEL MUSCLE MW/VAC MS	15	393.15	1.10	26.21
LEG	LEG BONE	G114L	FROZEN MUTTON LEG BONES MS	90	1,591.23	4.46	17.68
LEG	LEG BONE	G224	FROZEN LAMB FEMUR LEG BONES MS	1	16.36	0.04	16.36
LEG	LEG MEAT	B221	FROZEN BONELESS LAMB LEG CHUMP ON SHANK OFF IW/SHRINK WRAPPED MS	226	4,250.14	11.91	18.81
LEG	LEG MEAT	W07	CHILLED BONE IN LAMB LEG CHUMP ON SHANK TIPPED IW/VAC MS(H.S.C.02042210)	12	219.62	0.61	18.30
LEG	LEG MEAT	W317	CHILLED BONELESS LAMB LEG CHUMP ON SHANK OFF IW/VAC MS	23	482.78	1.35	20.99
LEG	LEG MEAT	W474	CHILLED BONELESS LAMB CHUMP CAP ON MW/VAC MS	20	228.70	0.64	11.44
LEG	LEG MEAT	W484	CHILLED BONELESS LAMB LEG CUTS MW/VAC	12	220.78	0.61	18.40
LEG	LEG MEAT	W502	CHILLED BONELESS LAMB LEG CHUMP ON SHANK OFF MW/VAC MS	24	468.14	1.31	19.51
LEG	LEG MEAT	W535	CHILLED BONELESS LAMB LEG CHUMP OFF SHANK OFF IW/VAC MS	24	529.12	1.48	22.05
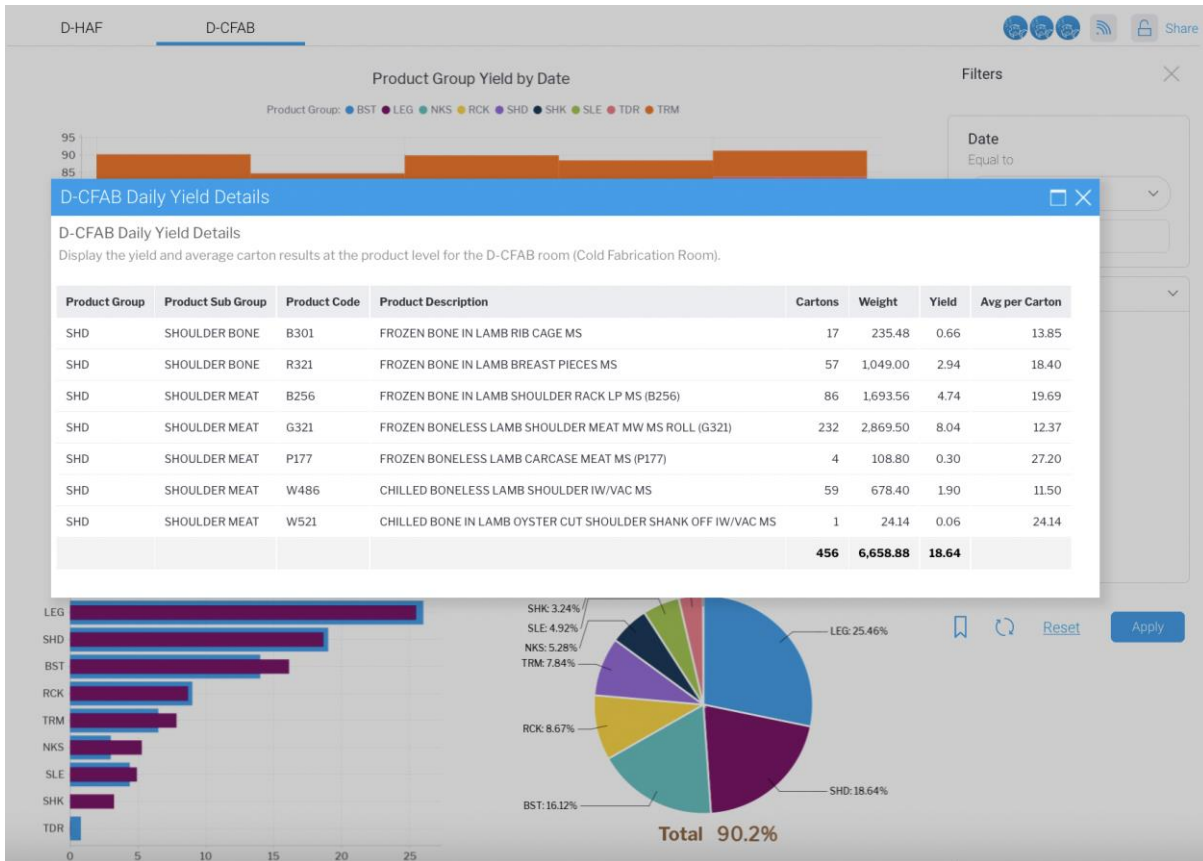
Processor 3's personnel previous spent a number of hours to manually build this type of reporting as required. The BI solution allows them to redirect this time into identifying exactly where these missed targets occurred and use the details on hand to support any decisions regarding corrective actions. The bar charts were especially useful as they clearly showed any areas of interest.
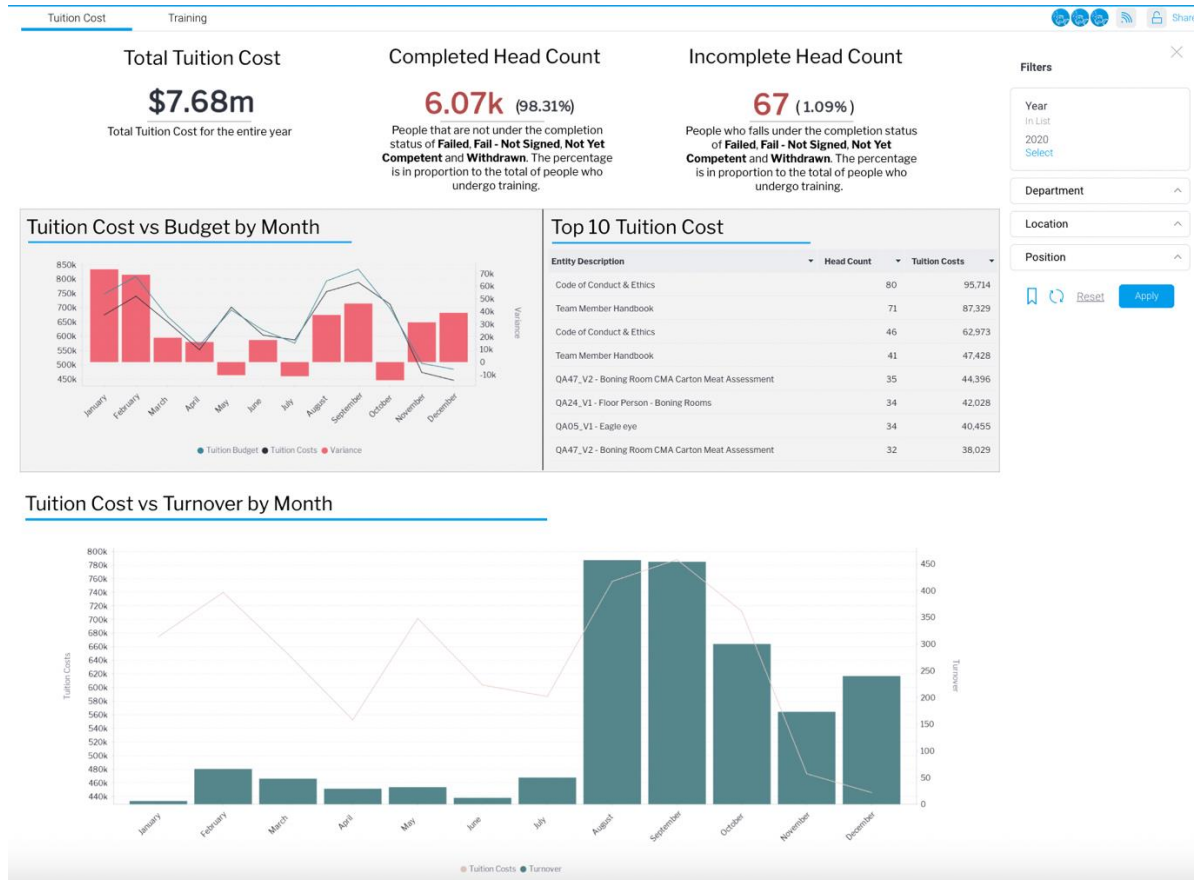
Processor 4/5

The dashboards explored summary headcount, learning participation, training completion (both successful and unsuccessful) and ratings segmenting by business unit and division. Further dashboards analysed tuition costs by month, training type, unit and division. Turnover was highlighted as an issue and compared to tuition costs by month.

Examples of Learning and Development dashboards developed for Processor 4/5 are below.
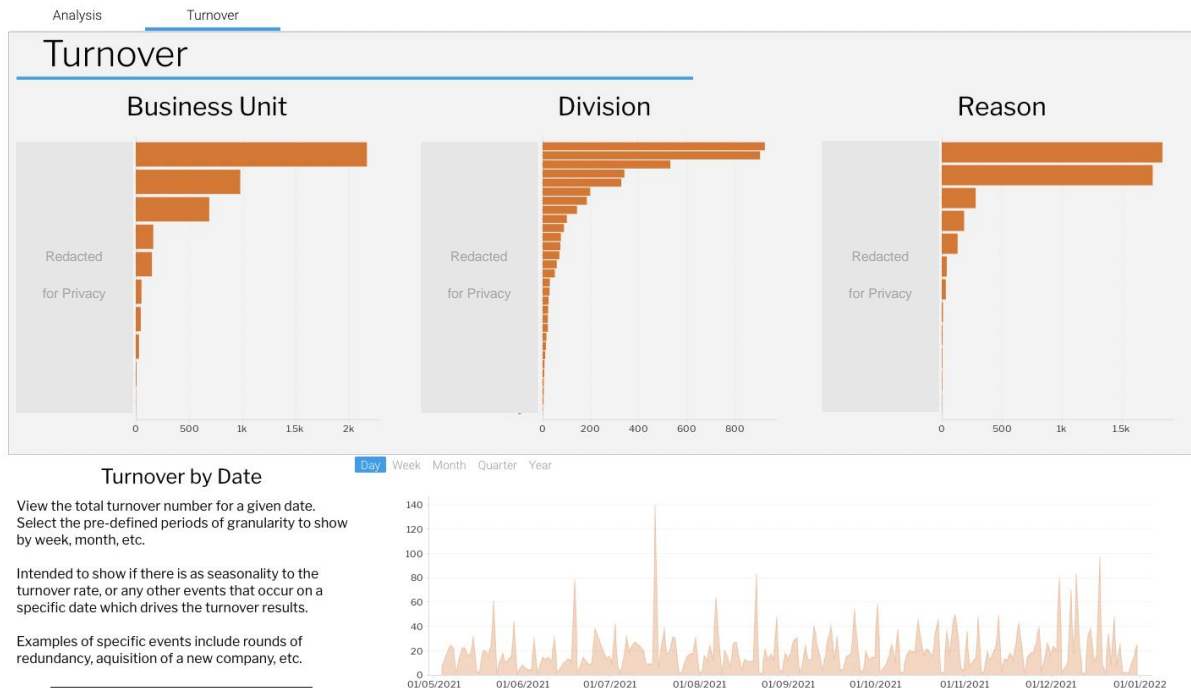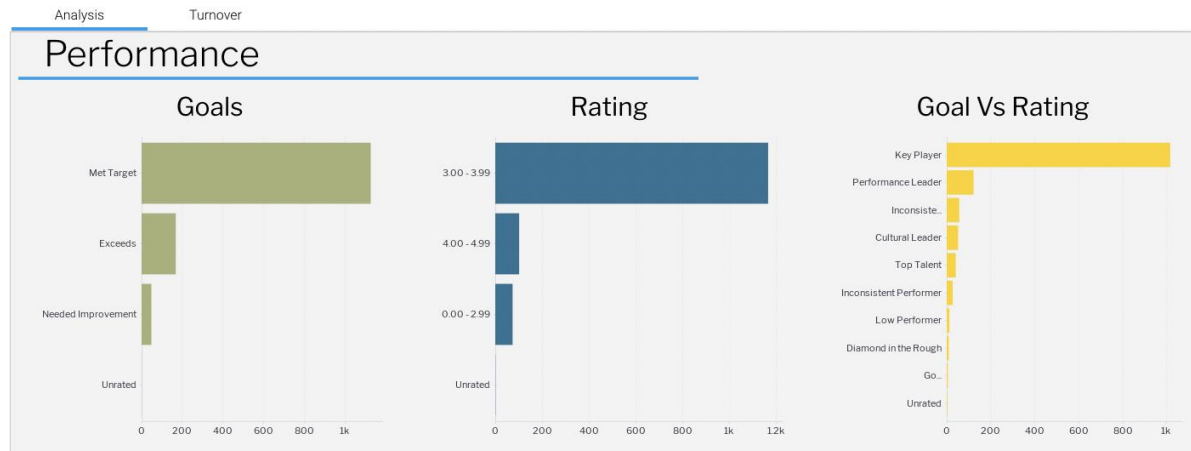
Overview

Training Dashboard

Turnover

Employee Analysis

Processor 6

Processor 6 both utilise and generate energy. Monitoring and making the most efficient use of that energy is key to

improving their bottom line. With this need in mind, the POC sought to bring together the generation and consumption of electricity and gas as well as production levels and energy spot pricing to enable quick management decisions around the utilisation of the type of energy required at any given time.

Examples of Energy Monitoring dashboards developed for Processor 6 are below.
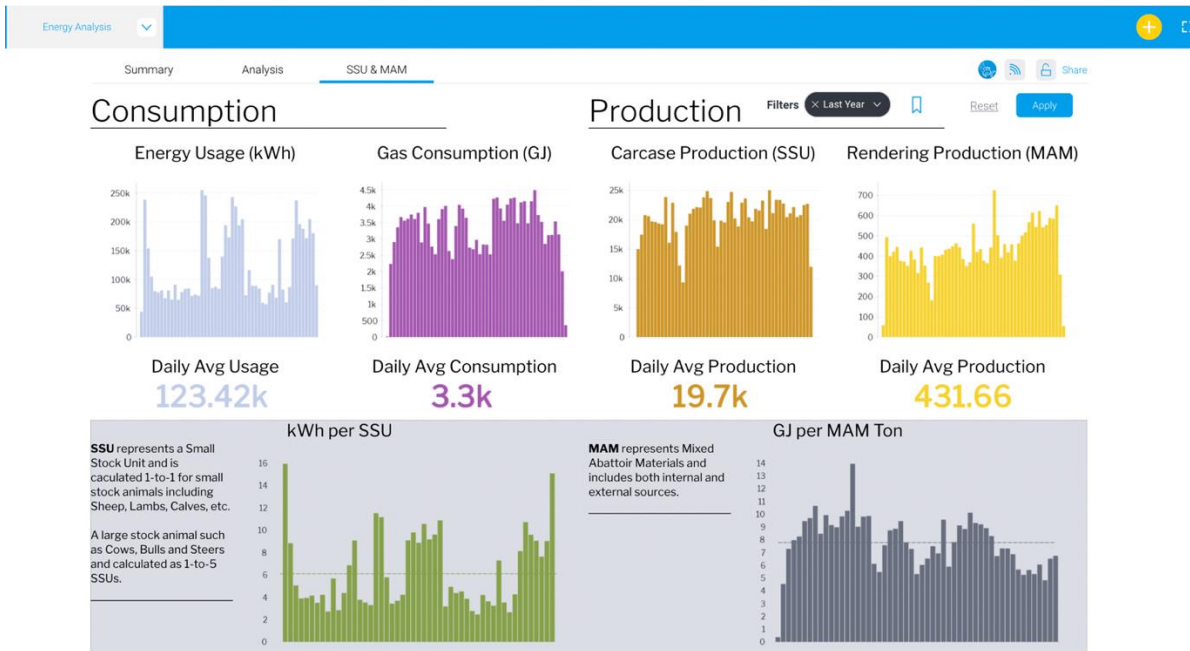
Dashboards include drill through capability to highlight details were required.
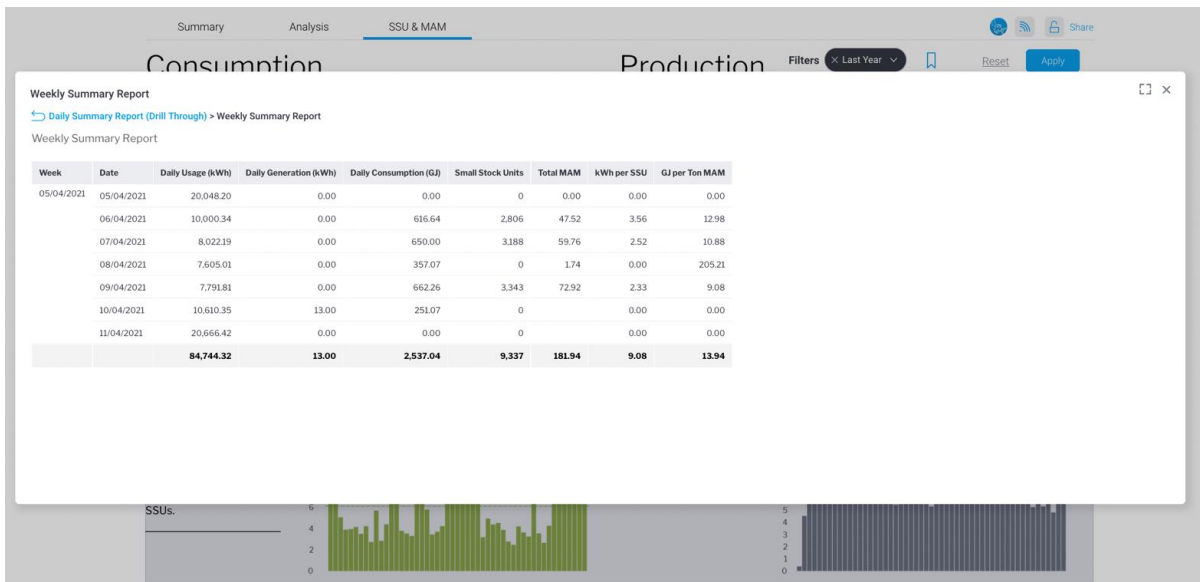
Processor 7

The reporting solution for Processor 7 examines the use of utilities, water, gas, and electricity, over time compared to production levels and temperature monitoring of key devices. Time analysis reporting on usage, temperature, and production as averages by month and hour of the day. Actual metrics are compared to averages, minimums, and maximums for analysis.

An overview dashboard provides a high-level view of key metrics.
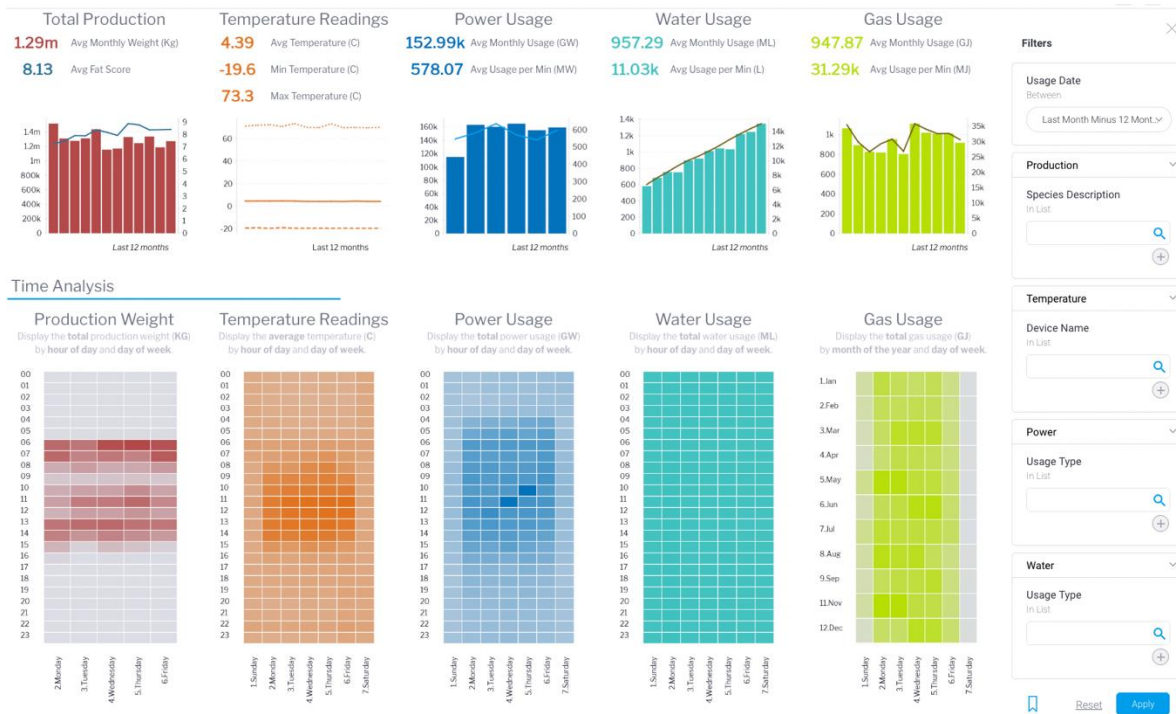
Dashboards include drill through capability to highlight details were required. Here production data is presented by the hour of the day.
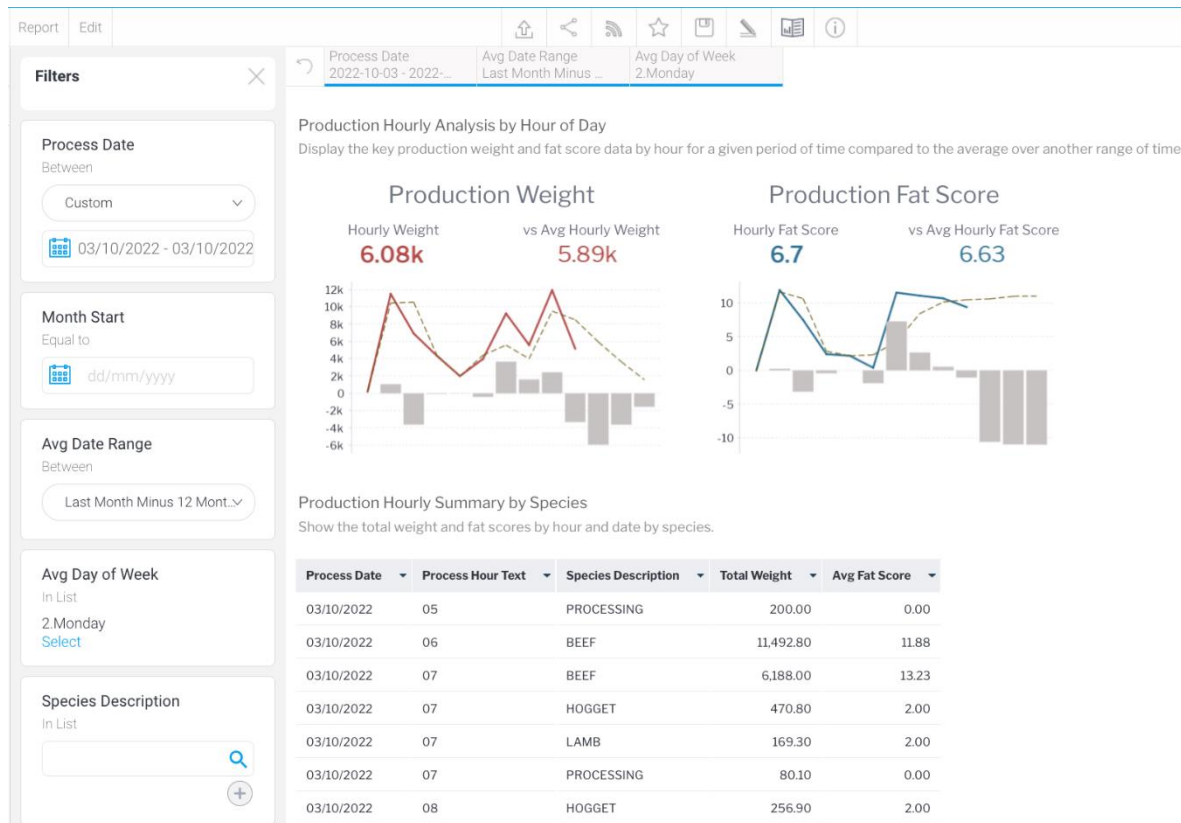
Temperature data presented temperature minimum and maximums with the ability to drill though to by the minute detail for selected devices.
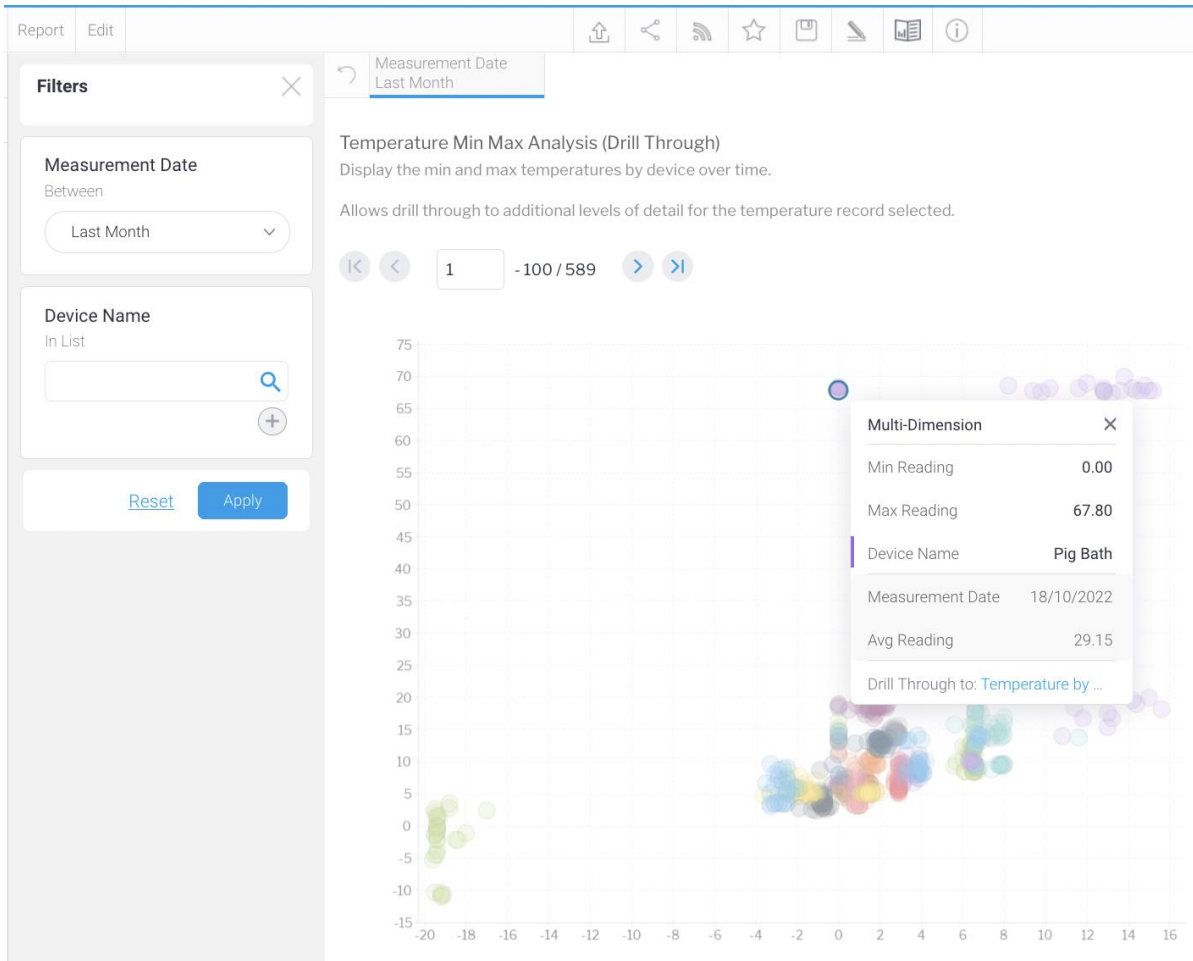
Processor 8

The BI solution for Processor 8 sought to present sales and pricing data as an overview highlighting sales by customer and state as well as volumes and prices for orders over time. A price/weight correlation highlights price per kg and weight produced by product type and is a key metric in understanding production value by product type.

A Sales Dashboard provides visualisations of key sales and pricing metrics in dollars and kilograms.

Dashboards include drill through capability to highlight details where required. Here sales data is categorized by product comparing actual price to minimum, maximum, and average price.

TQM Sales - Summary by Product

Sales Category	Product Code	Product	QTY	Total Sales	Weight KGs	Min Price	Avg Price	Max Price	Variance	Avg Price	VAR	VAR %
Chu/Rump	2022	LAMB CHUMP MW/VAC	59	$11,087.91	783.40	$14.00	$14.13	$14.20	$0.20	$9.75	$4.38	31.01%
F/Shank	2043	LAMB FORESHANK TIPPED LP	24	$5,120.64	487.68	$10.50	$10.50	$10.50	$0.00	$6.65	$3.85	36.66%
H/Shank	2057	LAMB HINDSHANK TIPPED L/P	165	$33,674.20	3,584.30	$9.00	$9.50	$10.00	$1.00	$6.25	$3.25	34.21%
Leg	2052	LAMB LEG CHUMP OFF NETTED IW/VAC	132	$37,404.78	2,698.24	$13.80	$13.90	$14.00	$0.20	$2.50	$11.40	82.01%
Leg	2053	LAMB LEG CHUMP OFF MW/VAC	90	$19,607.28	1,490.34	$13.00	$13.15	$13.30	$0.30	$9.25	$3.90	29.65%
Loin	2031	LAMB EYE OF SHORT LOIN DENUDED MW/VAC	1	$449.40	12.84	$35.00	$35.00	$35.00	$0.00	$17.15	$17.85	51.00%
Loin	2041	LAMB SHORT LOIN PAIR IW/VAC	60	$11,756.01	1,119.62	$10.50	$10.50	$10.50	$0.00	$8.30	$2.20	20.95%
Offal	5004	OVINE FATTY RUNNER	108	$19,398.36	2,282.16	$8.50	$8.50	$8.50	$0.00	$8.50	$0.00	0.00%
Other	2009	LAMB NECKS LP	207	$20,503.71	3,807.54	$5.20	$5.38	$5.50	$0.30	$3.50	$1.88	34.94%
Other	2013	LAMB TENDERLOIN MW/VAC	8	$2,438.00	97.52	$25.00	$25.00	$25.00	$0.00	$3.00	$22.00	88.00%
Other	2026	LAMB TRIMMINGS 65 CL BULK PACKED	167	$24,407.76	3,755.04	$6.50	$6.50	$6.50	$0.00	$5.25	$1.25	19.23%
Other	2039	LAMB NECK FILLET ROAST MW/VAC	52	$18,729.82	985.78	$19.00	$19.00	$19.00	$0.00	$14.00	$5.00	26.31%
Other	2102	LAMB FAT TRIMMINGS BULK PACKED	126	$3,464.13	2,309.42	$1.50	$1.50	$1.50	$0.00	$1.40	$0.10	6.66%
Rack	2004	LAMB RACK CAP ON CFO FRENCHED IW/VAC	48	$15,847.39	614.24	$25.80	$25.80	$25.80	$0.00	$17.00	$8.80	34.10%
Shoulder	2006	LAMB SQUARE CUT SHOULDER IW/VAC	300	$48,384.83	5,093.14	$9.50	$9.50	$9.50	$0.00	$5.95	$3.55	37.36%
Shoulder	2042	LAMB SHOULDER OYSTER CUT IW/VAC	6	$1,141.00	81.50	$14.00	$14.00	$14.00	$0.00	$9.50	$4.50	32.14%
Shoulder	2074	LAMB SHOULDER NECK FILLET REMOVED MW/VA	170	$45,256.29	3,163.82	$14.20	$14.30	$14.50	$0.30	$17.00	$-2.70	-18.88%

Offal reporting is detailed by product and includes weight, yield, and value lost revenue.
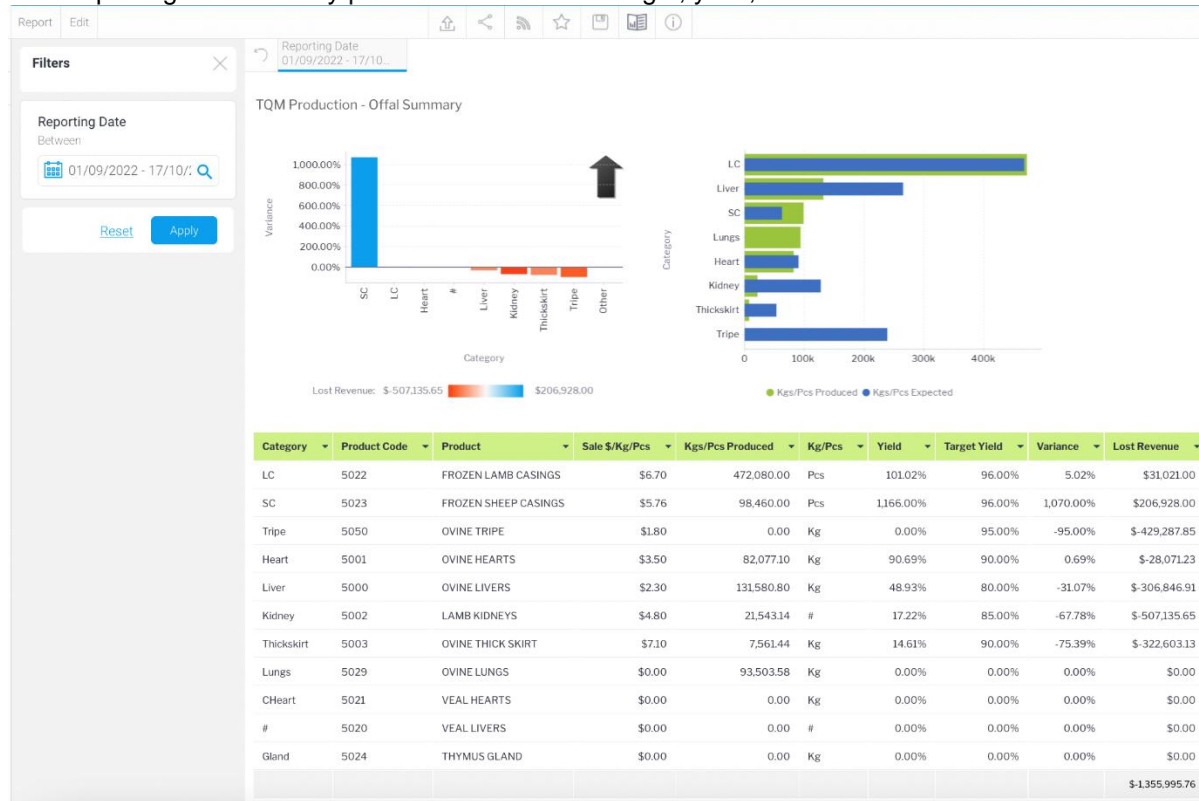
7.0 Conclusions / Recommendations

Opportunities to build the relationship between several of the processes and Toustone continue and will be actively pursued by Toustone. This includes support in the future to scope and develop ideas for future applications.

Toustone is increasingly moving into the machine learning space and recognises the part a number of these POC experiences have played in realising the potential machine learning can offer the red meat industry. Funding opportunities for machine learning will be explored in the future wherever identified.

The potential for data collection and use in the red meat industry remains immense. These types of opportunities play an important role in furthering the industries data driven future.

8.0 Bibliography

Not applicable

9.0 Appendices

Not applicable