FOYLE MEATS
MELTON RD
SIX HILLS
MELTON MOWBRAY
LE14 3PR

Environmental Permit Application

Resources & Raw Materials

Document Ref: Attachment B.3.14

1.0 RESOURCES

1.1 Energy

The Foyle Meats – Melton Mowbray primarily uses two energy sources on-site:

- Electricity
- LPG

1.1.1 Electricity

Electrical energy is supplied by British Gas under a contract negotiated at Foyle Foods Group level.

Significant investment has been put into the site planning and initial build programme to ensure good overall site energy monitoring and control. This was achieved through the installation of a Building Management Control System.

Electricity sub-metering carried out on-site.

The building management system monitors and controls through set parameters and schedules all site critical processes.

These processes are as follows:

- Refrigeration systems,
- Chilled Storage,
- Compressed air usage,
- Office Space heating systems control.

In 2022, the site used a total of 935,236 kWH of electrical energy.

Table 1.1: Electricity Usage per Tonne of Finished Product 2022

Year	Electricity (kWH)	Finish Product (ton)	Efficiency (kWH /ton)
2022	935,236	16,561.81	134.61

Table 1.2: Electricity Submetering at the Site

EPI-SENSOR - kWH	2019	2020	2021	2022
FM Electric Canteen	14,161	14,529	12,910	14,902
FM Electric Fridge Evaporator	108,712	110,540	125,760	132,530
FM Electric Plantroom 1 DB2 (PWR)	44,362	35,528	41,981	44,395
FM Electric Plantroom1 DB1 (Light)	56,922	73,436	73,369	73,969
FM Electric Mains Incoming	856,053	820,966	891,074	935,236
FM Electric Fridge Compressors	250,533	265,147	271,239	281,287
FM Electric Plantroom2	165,037	161,458	212,954	220,635
FM Electric Office	11,962	11,996	9,979	9,961
FM Electric Air Compressors 75KW		22,213	74,619	73,489
FM Electric Air Compressors 11KW and 37KW	67,398	43,901	36,833	31,904
Total	**719,088**	**738,746**	**859,643**	**883,071**

Non-monitored electric in 2022 = 52,165 kWH

1.1.2 LPG: Liquefied Petroleum Gas

LPG is supplied by the company *Flogas* under a contract negotiated at Foyle Foods Group level.

The slaughter of cattle and processing of meat involves a range of energy stages where heat/hot water is required. This is supplied to the whole factory by a single Babcock Wanson HW3P Series boiler, which operates on LPG.

The boiler undergo maintenance annually, which is required in order to ensure its continued efficiency.

The boiler also contains a heat exchange unit which provide hot water to the whole facility and for the central heating system, at the following temperatures:

- 85 ^{o}C Hot water for sterilisation.
- 45 ^{o}C Hot water for cleaning.

Energy usage and cost is monitored which gives real time usage and trending for both electricity and gas.

Table 1.3: LPG Usage per Tonne of Finished Product 2022

Year	LPG Usage (m^3)	Finish Product (ton)	Efficiency (m^3/ton)
2022	109,485	16,561.81	6.61

1.1.3 Other Fuels

A small volume of diesel is stored in a double-skinned tank, located adjacent to the Truck-Wash, for the fuelling of the following:

- external forklifts
- site shunting lorry

All internal forklifts operate on electricity-powered batteries.

1.2 Water

The site used 23,335 M^3 of water in 2022, which equates to 89.75 M^3 per day over a 5-day work period, which is supplied by the Water Plus mains water retailer supply.

There is no water bore-hole on site.

The water consumption figure in Table 1.4 is a combination of two-meter readings from what have been labelled the *Main Meter* and the *Lairage Meter*.

Table 1.4: Water per Tonne of Finished Product 2022

Year	Water Usage (m^3)	Finish Product (ton)	Efficiency (m^3/ton)
2022	23,335	16,561.81	1.41

Water Softening

Water is softened before use in the boilers and for some production activities. This water passes through a water softening unit and is then stored in the softening water storage tank before use.

Water hardness refers to the presence of dissolved ions, mainly of calcium Ca2+ and magnesium Mg2+.

The conventional water-softening device deployed at this site depends on a process known as *ion-exchange* in which "hardness" ions trade places with sodium and chloride ions that are loosely bound to an *ion-exchange resin* contained within dedicated units in the boiler house. Calcium ions in the water displace sodium ions, which are released into the water. In a similar way, positively-charged zeolites bind negatively-charged chloride ions (Cl–), which get displaced by bicarbonate ions in the water.

2.0 RAW MATERIALS

All suppliers of raw materials to the site are accredited Foyle Foods suppliers.

Prior to commencement of supply, all potential suppliers are required to fill out a Supplier Self-Assessment (SSA) form. This must then be certified by an approved auditor to confirm the suitability of the supplier. The details from the SSA form is entered into the Foyle supplier database and an audit is planned.

If a medium/low risk supplier has third party accreditation from the British Retail Consortium (BRC), from the European Food Safety Inspection Service (EFSIS) or are regularly audited by a recognised organisation such as AIB and have obtained satisfactory results, they may be fully approved without the requirement of an audit. The frequency of supplier audits of approved suppliers is dependent on the material being supplied, the level of third party recognised audits and the scores the factory achieves during the audit.

Activities at the site include the slaughter of cattle and the dressing, chilling and quartering of beef carcasses and the harvesting of offal, cod fat and the packing of beef offal and cod fat into vacuum pouches and lined cardboard boxes.

The finished product is primarily chilled quarters, which are transported to other site for further processing (i.e boning). Therefore, the primary raw material is cattle in the form of Young Bulls, Bulls, Steers / Steers GB, Cows and Heifers / Heifers GB.

Annual tonnage of finished product for 2021 – 2023 are as follows:

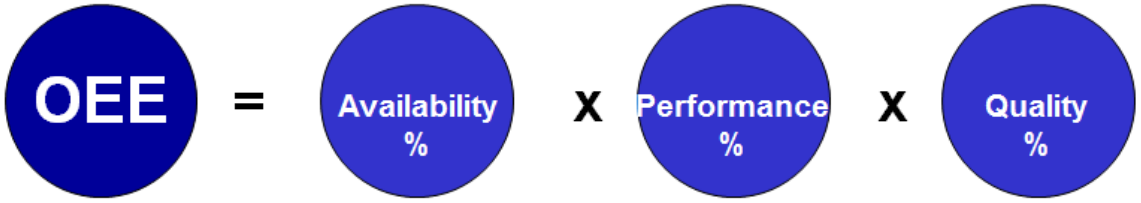
Year	Head (No.)	Cold Weight (ton)	Ration
2023	46,309	14,809.90	0.32
2022	50,286	16,561.81	0.33
2021	51,441	16,801.73	0.33

3.0 Production Efficiency

3.1 Equipment Effectiveness

To measure equipment performance and help identify and target improvement efforts, the site uses Overall Equipment Effectiveness (OEE)

OEE should be determined by calculating the three simple elements below



Measuring OEE help with understand the losses incurred during the planned use of equipment.

Availability Losses	**Breakdowns:** Breakdown of equipment for more than 10 minutes. **Setup and adjustment:** The time taken when changing a machine or process over from the last good product of the previous run, to the first good product of the new run. **Waiting:** If a piece of equipment is not running due to waiting for an operator, tools, equipment, information etc.
Performance Losses	**Minor Stoppage Losses:** A short interruption in the running of the equipment <10mins. **Reduced Speed Losses:** The difference between the times it should take to complete a batch of work and the actual time taken.
Quality Losses	**Quality defects and rework:** Time spent producing or reworking parts that do not meet the quality standard. **Yield Losses:** Time or parts lost during the start-up and shutdown of equipment. Parts or output lost during the operation of the equipment.

Using the relevant formula each of these elements may be quantified. Low values from the individual elements will result in an even lower overall OEE figure.

OEE essentially answers the following questions:

- Is the equipment really working at its full capacity?
- What was the specified OEE when the equipment was commissioned?
- Is new plant really necessary and will the benefits of its purchase justify the expense?

3.2 Production Effectiveness

To measure production performance and help identify and target improvement efforts, the site uses Attainment to Plan (ATP).

ATP is the analysis of the planned expected output verses the attained or achieved production output.

ATP (%) = (Production Achieved / Production Possible) * 100

When setting a plan the site uses, on average, a four-week time band.

4.0 Packaging

The site has a number of packaging suppliers. Stocks of packaging materials are measured in number of units rather than tonnes.

Packaging includes:

- **Plastics:** including vacuum-pack and heat shrink bags, pallet wrap,
- **Cardboard**: including sleeves and various size boxes,
- **Labels**: adhesive backed paper,
- **Rope:** beef rope.

4.1 Measures to Reduce Packaging

Active controls and monitoring systems are in place to account for packaging volumes used and to optimise packaging use efficiency.

Both the source and type of materials used are under periodic revision by management - using BAT - in order to ensure maximum efficiency per unit output. This ensures packaging per product is kept to minimal levels and is recyclable, causing minimal environmental impacts.

Suppliers of raw packaging material are screened and audited for their suitability.

Marketing / advertisements can influence the progress in this area in terms of reducing packaging to market.

5.0 Cleaning

Cleaning is carried out between 19:00 – 00:00, after the daytime production shift ends.

5.1 Water

Hot water for cleaning is supplied by the site Hot Water Boiler):

- 45°C Hot Water to Domestic Taps
- 85°C Hot Water for Cleaning

5.2 Chemicals

All cleaning chemicals are stored in the secure Chemical Store, within the Main Building. This is to prevent waterway contamination and any safety risk.

All chemicals used on site, which are also supplied by Holchem, come supplied with a Safety Data Sheet (SDS) and must go through an internal health and safety approval procedure. In the unlikely event of container failure and simultaneous bund failure, any spillage would be directed to the effluent treatment plate via internal drainage.

When the chemicals are used in the process areas for wash down, any spillage or chemical washed to drain goes through the site Effluent Storage Sump.

All empty chemical drums are returned to the suppliers.