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Cambrian Pet Foods Ltd

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CAMBRIAN PET FOODS LIMITED
ENVIRONMENTAL PERMIT APPLICATION SUPPORT, PROCESS OVERVIEW

RAMBOLL

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1. INTRODUCTION

1.1 Background

Ramboll Environment & Health UK Ltd ("Ramboll") was instructed by Cambrian Pet Foods Limited (the "Applicant", or the "Operator") to develop a Process Overview of the activities undertaken by the Operator at the Llangadog processing facility located at Tywi Valley Food Park, Llangadog, Carmarthenshire, SA19 9LN (referred to herein as the "Installation" or the "Facility"). This overview provides: a description of the current layout of the Facility; a summary of the process inputs, outputs and consumption; and, a general assessment of the efficiency of the Facility with regards to the energy and raw material usage and waste output in relation to the output of finished product.

1.2 Reliance and General Limitations

This Process Overview has been prepared exclusively for the purpose of an application for an Environmental Permit by Cambrian Pet Foods Ltd and such other persons or entities whose reliance is explicitly authorised in writing by Ramboll.

The conclusions presented in this report represent Ramboll's best professional judgment based upon the information available and conditions existing as of the date of the assessment. In performing its assignment, Ramboll must rely upon information provided by the Client and information provided by third-parties. Accordingly, the conclusions in this report are valid only to the extent that the information provided to Ramboll was accurate and complete. Ramboll makes no representations or warranties, express or implied, about the conditions of the Installation.

2. INSTALLATION DESCRIPTION

2.1 Installation Layout

The site, which was originally developed in the 1950s as a creamery, comprises a triangular shaped parcel of land of approximately 5.2 hectares. The two main buildings on the site are in the north and the north-west and are joined by a loading canopy.

The building at the centre of site houses the main production areas (meat mixing and batching area, a laboratory, and a canning hall), with administrative offices located in the north-east portion. The building in the west, which houses an elevated conveyor system to transfer filled cans, is used for packaging and warehousing.

Other structures on-site include a chilled warehouse, a boiler house, a building used for raw material preparation and freezing using plate freezers and an effluent treatment plant (ETP).

The ETP is located in the southern section of the site, south of the Afon Bran, accessed via a bridge over the river. The ETP comprises a dissolved air flotation (DAF) plant, enclosed filter bed, external filter beds, settlement towers, clarifiers and a pump house.

The plate freezing building is located in the north-east of the site and also contains an area used for fresh meat preparation. Other ancillary equipment is housed at the centre of the site in purpose built structures, including the current Boiler House containing a 'Cochran' boiler for steam raising, and a Compressor House (adjoining the main production building in the south).

There are a number of disused buildings on-site which were part of the site's former use as a creamery, including a disused brick-built boiler house with chimney stack at the centre of the site and two pump houses in the south of site which were formerly used by the creamery for purposes of surface water abstraction.

Cambrian is in the planning stages of a site improvement programme which will re-develop a large section of the current brown field site in Llangadog. The development will replace buildings, previously used by the former Creamery with new facilities which are to include an additional (back-up) steam boiler, a new drainage system and modern, efficient equipment.

The proposed footprint of the new development will be approximately 4300sq meters. The proposed build will be a food grade internally clad, single span steel portal building, with food grade flooring, covings and internal drainage. In addition, refurbishment of an existing adjacent building will incorporate a laboratory, food testing, QA testing- with an open glass area to view the production facility (a customer visitor centre) with staff facilities including changing rooms and locker and wash rooms. The building will be built to the specification required to comply with British retail Food requirements.

The proposed developments will increase production capacity at the Facility to 80,000 tonnes per annum. Process effluent will be directed to the Effluent Treatment Plant, which has sufficient capacity to treat the increased effluent levels due to increased capacity.

Non-Technical Summary

The operations and processes employed at the Facility are documented in *PNN-00206_B2.5_Non Technical-Summary.*

3. PROCESS COMPLEXITIES FOR PERMITTING

3.1 Scenario

The Installation currently operates under a Part B Environmental Permit administered by Carmarthenshire County Council. However, the current configuration of the Installation now provides a daily production capacity of approximately 180 tonnes, which is over the threshold of 75 tonnes per day of animal and vegetable matter with meat content of more than 10%, as set by the Environmental Permitting Regulations.

By virtue of production increases to over 75 tonnes per day, the facility is required to surrender its Part B permit and apply for a Part A(1) Environmental Permit to be administered by NRW for the following activities:

- Section 6.8 Part A(1) (d) (iii) – Treatment of animal and vegetable matter and food industries with meat content of more than 10% greater than 75 tonnes per day; and
- Section 5.4 Part A(1) (a)(i) - Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC concerning urban waste-water treatment(4) (i)biological treatment.

The current production capacities for the two production lines used at the facility are presented in the table below.

Table 3.1 Production capacity

Production Machine	Maximum Production Capacity (tonnes/ day)
Cans	161.28
Trays	18.96
TOTAL	**180.24**

4. PROCESS INPUTS, CONSUMPTION, OUTPUTS AND EFFICIENCY

This section provides an overview of the raw material inputs to Installation processes along with details on water and energy use and efficiency.

4.1 Production Output

The total finished product tonnage between July 2017 and June 2018 was 17,431.38 tonnes, including can and tray products.

4.2 Energy Supply and Consumption

The Installation is supplied with gas and electricity from the national grid.

Table 4.1 below provides a description of the sources of energy used at the Installation, the key consuming plant, and total consumption for the year July 2017 to June 2018.

Table 4.1 Energy Sources & Consumption

Energy Source	Use	Annual consumption
Natural Gas	Steam generation (for use in production)	8,367,255.49 MWh
Electricity	Manufacturing processes and plant and equipment e.g. ammonia plant and refrigeration and freezers.	3,439,598 MWh

Efficiency is measured using a MWh/tonne of finished product metric. The efficiency metrics for the period July 2017 to June 2018 are provided in Table 4.2 below.

Table 4.2 Energy Efficiency Metrics

Energy Source	Performance
Natural Gas	3.84 MWh / tonne of finished product.
Electricity	0.92 MWh / tonne of finished product.

4.3 Use of Raw Materials and Water

The primary raw materials used at the site include meat, fish, gravy/ jelly, cereal, vegetables, vitamins and minerals. In addition, Cambrian uses maintenance-related materials such as oils, lubricants and greases; boiler, cooling tower and raw water treatment chemicals; wastewater flocculent; refrigerant chemicals; and sanitizers and detergents. The following table details the main raw materials used in production.

Table 4.3 Summary of Raw Materials & Water

Raw Material	Use	Annual Use (Tonnes)	Maximum Amount at the Installation at any one time (Tonnes).
Ammonia	Refrigeration	0.1	2
Cereals	Ingredient	676.9	30
Oils and Fats	Ingredient	143.56	2
Vitamins	Ingredient	38.93	4.3
Dry ingredients	Ingredient	64.95	No information available at this time
Dry ingredients- cans	Ingredient	275.12	29.4

Wet- frozen (Animal)		Ingredient	4888.54	240
Wet- fresh (Animal)		Ingredient	3409.84	135
Herbs, spices & veg		Ingredient	375.71	12
Film		Packaging	56.88	15
Boiler softener-Aquatreat	204	Engineering	0.425	125 Litres (~0.145 tonnes[1])
	B112	Engineering	3000 litres (~3.48 tonnes[2])	125 Litres (~0.145 tonnes[3])
CL02 System-Aquatreat	Sodium Chlorite 25%	Engineering	5	1 x IBC
	Hydraulic Acid 28%	Engineering	3.42	1 x IBC
Retort chemicals-Aquatreat	460	Engineering	0.875	75 litres
	350	Engineering	3	200 litres
Diesel		Forklifts	4000 litres (~3.4 tonnes)	2500 litres (~2.1 tonnes)
Metal cans		Packaging	1422.13	43
Plastic trays/ film		Packaging	136.53	8
Cardboard		Packaging	137.06	86
Inks		Packaging	0.27	35 litres
Chlorfoam Plus		Cleaning	10.28	1.1
Holquat		Cleaning	0.3	0.2
Sodium Hypochlorite		Cleaning	6.42	1.25
Degreaser		Cleaning	0.77	0.15
Total:			11,663.79	612.1[4]

Efficiency is measured using a tonne raw material/tonne of finished product metric. The finished product tonnage between July 2017 and June 2018 was 17,431.38 tonnes. The efficiency metrics for raw material use is provided in table 4.4 below.

Table 4.4 Raw Material Efficiency

Raw Material Use (Tonnes)	Performance
11,663.79	0.67 t / tonne of finished product.

In addition to the raw materials listed above, water is a significant raw material. Groundwater abstractions provide the water used during production processes and clean-down. Administrative buildings are supplied with mains water from Dwr Cymru. The facility has a licence to abstract surface water; however, this is not currently in use.

[1] Based on relative density of 1.16.
[2] Based on relative density of 1.16.
[3] Based on relative density of 1.16.
[4] Based on relative density of 1 for unknown densities

Table 4.5 Water Efficiency

Supply	**Water Use (m^3)**
Groundwater	281,518[5]
Mains	6,803.6[6]
Total	288,321.6
Performance	16.54 m^3 / tonne of finished product

4.4 Waste Management

The key waste streams generated at the Installation are presented in Table 4.6 below. Waste is segregated and stored appropriately ready for collection. The Installation records the monthly waste figures and monitors performance. The waste hierarchy is applied at the Facility and the Operator seeks, where possible, to prevent waste from being generated (see further discussion of waste prevention techniques employed at the Installation within the Best Available Techniques Technical Assessment). All staff receive basic information on waste management during inductions, followed by more department specific training as required.

Hazardous Waste

The Facility's current operations do not generate a significant quantity of hazardous waste. Types of hazardous waste generated on an infrequent basis are limited to: waste oil from maintenance activities; empty chemical containers; certain laboratory wastes; fluorescent tubes; and, printer ink cartridges. The Facility contracts with a suitably licensed waste contractor for disposal of hazardous waste as and when the need arises.

Empty containers and waste oil is stored externally in the chemical compound pending collection. Fluorescent tubes and printer ink cartridges are stored internally within designated lockable boxes.

Non-Hazardous Waste

Non-hazardous waste generated by the site consists mainly of general domestic waste, cardboard, wooden pallets, plastic, cooked product waste, reject raw materials (including animal-derived materials), redundant totes and ETP sludges. Facility personnel reported that measures are taken to eliminate and/or minimize waste generation as required by the Waste (England and Wales) Regulations 2011. General domestic waste from the offices, laboratories and canteen, as well as cooked product samples generated from quality testing in the laboratories, is stored in a designated skip which is collected by LAS Recycling Ltd approximately weekly.

Cardboard and plastic is baled and collected for recycling. The wooden pallets are sent on for re-use.

Uncooked animal-derived waste (fat trimmings and certain rejected meat) is frozen and stored within the Cold Store Warehouse in Dolavs (open crates) until it is collected in accordance with the Animal By-Products Regulations.

The sludge generated by the ETP is largely comprised of animal fats settled/ separated out of the process wastewater via various treatment stages. The sludge is mechanically formed into a cake and collected for incineration.

All waste transfer documentation is retained on site.

[5] Value is based on a pro-rata calculation, based on meter readings from 12/01/2018 (2725090) to 17/08/2018 (2892458).
[6] Value is based on a pro-rata calculation, based on usage of 6524m^3 from 21/07/2017 to 06/07/2018.

Based on the waste storage arrangements observed by Ramboll during its visit on 26th July 2018 and the waste management system in place at the Facility, the potential for waste material to contaminate ground and/ or groundwater is considered to be low. The waste management system is described in further in Cambrian's Environmental Management System (EMS).

Table 4.6 Summary of Wastes Generated

Waste Category	Source of Waste (Process)	Annual Quantity (tonnes)	Storage Location	Size and Type of Container	Disposal Recovery Route
General	Production (packaging of raw materials) and office waste.	188	Outside redundant boiler house	Roll on, roll off. 35 yard	Landfill
(Animal) Product waste ("floor waste")	Production-floor waste	60	Freezer	Dolavs/ tipper lorry	Incinerated in line with the Animal By-Products Regulations
Plastic	Production-waste packaging, Canteen and office	21.7	By Dolav wash area	Baled	Recycled
Cardboard	Production-packaging	35	Outside redundant boiler house	Roll on, roll off. 35 yard	Recycled
ETP Sludge	ETP	1,300,000 litres (~1,300 tonnes)	ETP	Tanker	Incinerated
Waste maintenance oil	Maintenance of plant	300 litres (~0.26 tonnes)	Oil stores	Oil drums	West Wales Lubricants
Sanitary/ first aid waste	Offices/ facilities (toilets)	48kg (0.048 tonnes)	N/a	Plastic bins/ liners	Incinerated
Sewage from cesspit	Office sewage and wash water	20,000 litres (~20 tonnes)	Cess pit	Tanker	Towy Waste
Total:		1625			

A performance monitoring metric of tonnes of waste per tonne of product is used to monitor efficiency. The finished product tonnage for the twelve-month period between July 2017 and June 2018 was 17,431.38 tonnes.

Table 4.7 Waste Metric

Waste Generated (tonnes)	Performance
1625	0.09 t / tonne of finished product.