

**M E M O R A N D U M**

<b>TO:</b>	Dr. Padraic Larkin.
<b>FROM:</b>	Breen Higgins
<b>DATE:</b>	18 December 2006
<b>RE:</b>	Application for an IPPC Licence (Review) from Dawn Country Meats Limited t/a Western Proteins, Hazel Hill, Ballyhaunis, Co. Mayo, Reg. No. P0048-02.

Application Details	
Class of activity:	7.4.1 the operation of slaughter houses with a carcass production capacity greater than 50 tonnes per day. 7.7.1 the disposal or recycling of animal carcasses and animal waste with a treatment capacity exceeding 10 tonnes per day. <i>Note: Previously licensed under Class 7.7 &amp; 7.4 of First Schedule of EPA Act 1992</i>
Section 87(1)b notice sent:	16/05/05
Information under Section 87(1)(b) received:	16/06/05
Notices under Article 17(2) issued:	28/09/2005
Information under Article 17(2) received:	03/11/2006
Submissions received:	One received on 01/06/2005.
Site visits:	27/01/05

## **Installation**

Dawn Country Meats Limited t/a Western Proteins, formerly known as Irish Country Meats, are collectively operating under licence Reg. No. P0048-01 granted on 01/08/1997. The Dawn Meats Group purchased the fixed assets of Irish Country Meats beef and sheep plants and rendering plant at Ballyhaunis, Co. Mayo from Glanbia plc in July 1999.

The facilities are housed on approximately 36 hectares on the outskirts of Ballyhaunis town; the processing buildings for both facilities and the associated infrastructure occupy approximately 7.5 hectares of this area while the remainder is under a mixed coniferous and deciduous plantation. The site is traversed by the Dublin to Westport railway.

The activities undertaken on-site are;

- the rendering of animal by-products to produce meat & bonemeal and tallow oil (Western Proteins); and
- the slaughter and boning of cattle and sheep (Dawn Ballyhaunis).

The primary activity carried out at Western Proteins (WP) is the rendering of animal by-products to produce meat and bone meal and tallow oil. The company currently have the capacity to process c. 100,000 tonnes of raw material per annum. Secondary activities include the operation of wastewater treatment plant and an odour abatement system to treat odorous gases from the production process. Dawn Ballyhaunis (DB) is dedicated to the slaughter and boning of cattle and sheep. Finished products from Dawn Ballyhaunis are bone-in-beef and lamb, vac pak primals and frozen manufacturing meat and offals. Product preservation relies on temperature control and packaging.

The company, prior to the grant of licence Reg. No. P0048-01 and for some time after the grant of the licence, was the cause of considerable local complaint as a result of odours emitted from the rendering installation. Odour complaints associated with the operation of the activity have reduced significantly over the past number of years, however there continues to be occasional odour nuisance reported. The company undertook a detailed assessment of the odour abatement system in 2000 and 2001 at which time modifications and upgrades were carried out, e.g., increase in biofilter capacity, covering of balancing tank and complete replacement of the process building roof. The net result of this programme of works was an improvement in the efficiency and effectiveness of the odour control.

## **Reasons for review**

The Agency initially agreed to a request from Dawn Country Meats t/a Western Proteins Ltd. to have their Licence (Reg. No. P0048-01) reviewed for the following reasons:

- a proposed change in raw material processed, subject to Department of Agriculture Food & Rural Development approval, leading to the installation being re-designated as a Category 1 plant (as defined by EU Regulation 1774/2002); and

- affect the necessary changes as a result of the transposition into Irish law of the Protection of the Environment Act, 2003.

However, the company whilst undergoing this review process decided that they no longer wished to proceed with this change to Category 1 processing but were nonetheless eager to undertake the review of licence Reg. No. P0048-01 to ensure that the terms of the licence were in accordance with the IPPC Directive (96/61/EC).

## **Process Description**

Western Proteins renders animal by-products and produces tallow and meat-and-bonemeal while also operating the Wastewater Treatment Plant (WWTP) which functions to biologically treat process waste waters from both the rendering operations and Dawn Ballyhaunis. The rendering activity receives offal in the form of meat, bone and fat from meat factories and butcher shops. These waste products from the meat industry are converted into two separate products namely tallow oil and meat and bone meal. The raw materials are delivered to raw material reception areas in covered delivery vehicles where they are emptied into intake pits to be transported to the process area by conveyers. Process equipment includes crushers, a cooker, where heat in the form of indirect steam is applied to the material, water is evaporated from the materials in the form of steam vapour, and a mixture of meat and bonemeal and tallow oil is left behind in the cooker. The meat and bone meal and tallow oil is then carried through enclosed conveyors to presses where the process of separating the oil from the meal takes place. The tallow oil is then further purified in separators prior to being sterilised and pumped to a designated heated storage facility. The meat and bone meal is milled, sterilised and loaded for dispatch.

The odourous air from the buildings and process equipment is extracted for treatment in the water scrubber, where ozone gas (O<sub>3</sub>) is also applied, and in the biofilter prior to being discharged to the atmosphere. Wastewater from the process is conveyed to the on-site WWTP for biological treatment, prior to discharge to the River Dalgan.

Dawn Ballyhaunis slaughters cattle and sheep to produce meat cuts to meet customer requirements. In addition to slaughtering, there are also facilities for cutting, boning, chilling and freezing of beef and lamb products.

Beef and lamb processing normally takes place Monday to Friday depending on the number of animals to be slaughtered. Peak slaughtering season occurs for cattle between September and November and for sheep from June onwards. The nature of the beef industry in Ireland is such that there is a tendency towards seasonality.

## **Use of Resources**

### Fuel

The rendering activity requires the generation of significant quantities of steam; the steam is generated by the combustion of either heavy fuel oil (HFO) in the stand-by boiler or tallow oil in the main boiler on-site. The use of HFO or tallow has been based on the relative cost/value of the HFO and tallow. The company have a program of improvements to reduce fuel usage on an on-going basis. Medium fuel oil is utilised in the Dawn Ballyhaunis boiler.

Diesel oil is used on site to fuel mobile plant including JCBs, tractors and forklifts.

### Electricity

Electricity usage on-site is primarily to operate pumps, augers, lighting, etc. The company aims to reduce electricity consumption by implementing energy saving measures on-site. The Recommended Determination (RD) requires the licensee to undertake an energy audit within one year of the date of grant of licence as per Condition 7.1. The audit shall be repeated at intervals as required by the Agency.

### Water

Water consumption has been recorded for the installation since March 2002. The daily average water consumption at Dawn Ballyhaunis is c. 415m<sup>3</sup>, with total consumption for 2004 placed at 150,000m<sup>3</sup>. Water usage on the Western Proteins site is c. 240m<sup>3</sup> daily, with total consumption for 2004 placed at 77, 000m<sup>3</sup>. While the company have made efforts to reduce energy and raw material usage the RD includes a condition requiring the licensee to undertake a water balance programme on site, as per Condition 5.5. The water balance programme will ensure that water consumption at Dawn Ballyhaunis is closely monitored and controlled. This will aid the company in rationalising water consumption on-site.

### **IPPC Directive**

This installation falls within the scope of categories:

6.4(a) *“Slaughterhouses with a carcass production capacity greater than 50 tonnes per day”*, and

6.5 *“Installations for the disposal or recycling of animal carcasses and animal waste with a treatment capacity exceeding 10 tonnes per day”*

of Annex I of Council Directive 96/61/EC concerning integrated pollution prevention and control.

The Recommended Determination (RD) as drafted takes account of the requirements of the Directive. In particular, Condition 7 *Resource Use and Energy Efficiency* provides conditions dealing with water, energy and raw materials use, reduction and efficiency on site. Condition 10 *Decommissioning and Residuals Management* provides for decommissioning of the site following cessation of the activity.

### **European Communities (Control of Major Accident Hazards involving Dangerous Substances) Regulations, 2006 (SI 74 of 2006)**

The activity is not covered by the Seveso Regulations.

### **Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the Incineration of Waste:**

Western Proteins uses tallow oil as a substitute fuel to operate the on-site boilers. A communication from the Department of Environment, Heritage & Local Government dated the 23<sup>rd</sup> June 2005 advised ‘that tallow oil should be classified as

product and not as a waste' in relation to the IPPC licensing process. Tallow oil therefore does not fall under the scope of WID.

The RD includes conditions regulating the operation, monitoring and control of the boilers while operating on tallow oil and/or heavy and medium fuel oil.

## **Recommended Determination**

### **Raw Material Acceptance and Handling:**

The RD includes a number of conditions in relation to the acceptance and handling of raw materials delivered to the rendering installation for processing. The conditions aim to ensure there is no loss of raw materials to the environment and also to minimise odourous emissions from the handling and movement of raw material. To help achieve this aim the RD requires the licensee to propose and install an air lock system at the entry to the intake buildings to avoid the loss of odourous air when raw material is delivered to the activity, as per Condition 3.13. Due to the capacity of the installation the processing of Animal By-products is restricted to 100,000 tonnes per annum as per condition 8.23 of the RD.

### **Air:**

#### Odourous Air Emissions:

This activity, similar to other rendering facilities in Ireland, has utilised biofilters in conjunction with an ammonia scrubber system to treat the odourous air from the cooking process and process buildings. Biofilter 1 has a filtration area of 620m<sup>2</sup> and has been in operation since 1995, while Biofilter 2 has a filtration area of 340m<sup>2</sup> and was commissioned in 2003. The system has the capacity to treat a maximum of 115,000m<sup>3</sup>/hour based on the BREF recommendations of 1m<sup>2</sup> of biofilter area per 120m<sup>3</sup>/hour of gas produced. To further reduce the loading onto the biofilter and aid the treatment of process gases on-site the installation utilises ozone gas dissolved in the irrigation water of the scrubber system. The RD places a combined limit of 100,000m<sup>3</sup>/hour loading on the biofilters as per *Schedule B: Emission Limits* in order to ensure that any difficulties associated with odours are minimised.

Odourous air emissions to atmosphere have traditionally resulted in a large number of complainants against the rendering sector including the licensee. The rendering of animal by-products had the highest number of complaints in 2002 and also the highest number of odour complaints in that year as reported in Agency reports<sup>1</sup>. The number of complaints has been consistently high due to the nature of the industry and the inadequate odour control technology that has been installed at some sites in the past. This situation has improved significantly in the recent past due to better management practices, the licensing process and the implementation of BAT.

A major study was undertaken at the installation in conjunction with the Biosystems Engineering Department, University College Dublin. The report covered a six-month study of the two biofilters used to treat the gaseous emissions, assessing their effectiveness in treating odours and ammonia. Other key parameters such as bed media moisture content, airflow velocity, temperature and relative humidity were also considered. The report concluded that despite peaks in loading to the biofilters caused by the sterilisation process, reductions in odour concentration of over 98%

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<sup>1</sup> IPPC Licensing and Control 2002; P.11

could normally be achieved. Ammonia when treated by the dual action of biofiltration and humidification had a 100% removal rate.

As a further part of the on-going improved odour management programme on-site the non-condensable gases, resulting from the rendering process, have been directed to the boiler for combustion. The non-condensable gases are typically the most odourous air stream arising from the process. If not combusted this air stream could contain peaks of odourous components, which may pass through the biofilter treatment medium without any significant reduction or may be inhibitory to the biological activity in the biofilter medium.

The RD requires that the integrity of all buildings be maintained and an assessment of building integrity undertaken every twelve months (Condition 6.14), the condition also requires that remedial measures identified shall be implemented, as agreed with the Agency, and reported in the AER. The RD requires the licensee to propose and install an air lock system at the entry to the intake buildings to avoid the loss of odourous air when raw material is delivered to the activity, as per Condition 3.13.

#### Emissions to Atmosphere:

The Western Proteins installation operates a 12.45MW boiler (duty boiler) for steam generation with back-up capacity being provided by a 4.4MW 'reserve' boiler. The duty boiler uses heavy fuel oil or tallow oil (depending on economic circumstances), while the reserve boiler uses heavy fuel oil only. The Dawn Ballyhaunis plant operates a 4.2MW boiler (steam boiler) and burns medium fuel oil only. All fuels used on site are required to have a Sulphur content of less than 1%.

The applicant has undertaken air dispersion modelling, using US EPA Screen 3, of the emissions to atmosphere from the operation of the Western Proteins and Dawn Ballyhaunis boilers. SO<sub>x</sub>, NO<sub>x</sub> and particulate concentrations were modelled. The emissions used in the model are based on the maximum measured emissions from the boilers as detected during the second biannual monitoring of 2004. The modelling concentrated on the duty boiler on the Western Proteins site and the steam boiler on the Dawn Ballyhaunis site and assessed performance under two firing regimes, i.e., high and low fire conditions. It was deemed unnecessary to model the emissions from the standby boiler at WP due the fact that the emissions from the standby boiler are lower than those from the duty boiler, the standby boiler is rarely used and the two boilers do not run in parallel.

The results of the modelling exercise indicated that the operation of the DM boiler on MFO and the WP boiler on tallow or HFO will not result in a breach of any air quality standards or of the more conservative 1/40<sup>th</sup> Occupational Exposure Limit. The modelled maximum emission rates are seen as being representative of the prevailing condition on the site and have been considered when setting the emission limit values in the RD for the on-site boilers.

#### **Water:**

##### Effluent Emissions to Waters:

The WWTP process includes primary screening, dissolved air floatation (DAF), effluent balancing, two stage activated sludge treatment, nutrient removal (anoxic zone and precipitation of phosphorus) and final clarification. All sludge generated at the WWTP is removed from site and spread in accordance with best practice on

the designated landbank. Screenings from the primary screen and the DAF unit are returned to the plant for rendering.

The effluent discharges to the Dalgan River a tributary of the Clare River. The licensee submitted a report on the assimilative capacity of the Dalgan River, dated January 2006. This report primarily addressed the issue of organic loading to the waterbody. It found that based on background BOD concentrations within the river system the discharge from the Dawn Meats wastewater treatment plant would consume less than 10% of the assimilative capacity. Following the discharge the maximum resultant BOD concentration will be of the order of 1.7mg/l as opposed to 1.5mg/l upstream of the discharge. This would indicate that from an organic perspective that a sustainable situation exists at the site vis-à-vis the relevant environmental quality standards.

EPA monitoring data from 2005 was utilised in order to assess the effects of the discharge with regard to nutrient levels within the system (NO<sub>3</sub> and PO<sub>4</sub>). Phosphorous occurs naturally in the aquatic environment and is of significance in regard to the phenomenon of eutrophication, i.e., over enrichment of lakes and rivers. It occurs in a number of forms including orthophosphate, polyphosphate and organic phosphate. The background concentration of PO<sub>4</sub> (Orthophosphate) in the Dalgan is seen to be in the region of 0.06mg/l PO<sub>4</sub>, or 0.02mg/l when expressed in terms of Total Phosphorous, downstream of the discharge point. As such it meets the standard criteria of 0.03mg/l P, i.e., unpolluted waters defined in S.I. No 258 of 1998, Local Government (Water Pollution) Act, 1977(Water Quality Standard Phosphorous) Regulations, 1998. Similarly resultant levels of NO<sub>3</sub> were observed to be in the region of 2.2mg/l downstream of the discharge and meet the criteria of 50mg/l NO<sub>3</sub> as defined in S.I. No. 439 of 2000, European Communities (Drinking Water) Regulations.

The EPA publication, The Biological Survey of River Quality 2003 states that “*a further improvement was noted downstream of Ballyhaunis. This is believed to be due to reductions in pollutant loadings from Ballyhaunis, particularly the large meat factory and rendering plant in the town, which are subject to an EPA IPC Licence. Moderate pollution remains downstream (Sampling station 0200) but the situation is vastly superior to that pertaining in the 1990s and earlier*”.

The Quality (Q) rating system for the river immediately downstream of the installation (EPA sampling point 0200) in 2003 awarded a rating of 3 to the Dalgan. The Q rating downstream of sampling point 0200 shows further improvement.

Based on the biological surveys of the river a clear improvement in water quality has been identified and this has been attributed to the performance of the installation since the original licence Reg. No. P0048-01 was issued. The RD, as drafted, aims to build on these improvements by applying appropriate controls and emission limits to the on-site wastewater discharge.

#### Surface Water Emissions:

There are six surface water discharge points from the activity (three points on the Western Proteins site and three points on the Dawn Meats site), the water discharged arises from building roofs and hardstanding areas at the rear of the sites. The surface water discharge is unlikely to be contaminated from activities on-site as all movements of animal by-products are restricted to yard areas where the surface

water is collected and directed to the WWTP. The RD requires the licensee to visually examine the surface water discharge daily and monitor it for a number of parameters on a routine basis. The surface water discharges on the Dawn Meats site are directly to the river Dalgan while the discharges from the WP site are via field drains to the Dalgan, as per Drawing No. WP/DWS/01/05A of the additional information submitted on 03/11/2006.

To further protect surface waters from risk of contamination from the on-site activities all tallow oil is stored within a bunded tank farm, while MFO is stored within a dedicated bunded area and chemicals are stored on mobile spill pallets which are in turn stored in a locked chemical storage building. Condition 3.6 of the RD includes the standard condition in relation to the bunding requirements for all tanks and drums.

#### Emissions to groundwater:

There are no emission to ground water associated with the activity. The RD requires that all activities on the sites take place within an enclosed area, thus preventing exposure of raw material or products to rainfall and other potential contaminants.

There are two production wells on-site one of which supplies water for the activity. Three groundwater monitoring points are associated with the activity; one at WP and one at DM and a third is situated off-site on adjacent lands and is outside the site boundary for the purposes of this licence.

Monitoring conducted on the on-site wells under the requirements of Licence Reg. No. P0048-01 in 2004 show the groundwater to be of good quality, with low levels recorded for all biological, chemical and microbiological parameters.

The RD requires the groundwater extracted from these deep wells to be monitored bi-annually for pH, TOC, Nitrate, Total Ammonia, Total Nitrogen and conductivity.

#### **Waste:**

Winter storage requirements for organic waste shall be provided as per Condition 3.21 of the RD. Organic wastes, such as WWTP sludges, lairage waste and paunch contents are to be spread on the approved landbank, in accordance with the installation's nutrient management plan by an approved contractor. All landspreading shall be carried out in accordance with the Code of Practice for Landspreading Agricultural Waste. The licensee submits a NMP annually to the Agency outlining the lands available for recovery of the sludge generated on site, the RD maintains this requirement. Landspreading of organic wastes from the installation are controlled by Condition 8 *Materials Handling* of the RD.

Some organic wastes originating on site shall be returned to the raw material intake building and passed through the rendering process. The wastes likely to be reprocessed include greaves, WWTP screenings, partly processed material, contaminated tallow, skip wash down water, etc.

Hazardous and non-hazardous wastes are sent off-site for disposal or recovery, to approved facilities, by licensed/permitted contractors. The RD requires the licensee to agree in advance any changes to the contractors used for the disposal/recovery of waste with the Agency.

## **Noise:**

Noise monitoring was undertaken at WP on Wednesday the 16<sup>th</sup> of March 2005 and at DB on the 23<sup>rd</sup> of March 2005 under the requirements of Licence Reg. No. P0048-01. The nearest Noise Sensitive Locations (NSL) to the WP site are in excess of 500m from the boundary while the closest NSL to the DB operation is a mosque approximately 400m from the site boundary. For WP the monitoring was undertaken at seven different boundary locations. The RD outlines a daytime limit at noise sensitive locations of 55dB(A) Leq 15 minute. A number of the locations monitored showed figures in excess of the 55dB(A) limit, with the highest reading of 72.5 dB(A) at NM6 where the exhaust vent from the installation would have been the major contributor to noise levels. However, as the monitoring was undertaken at the boundary of the site and due to the relative distance from noise sensitive locations this is not considered a non-compliance with licence conditions.

Monitoring at DB was undertaken at six locations. The daytime limit of 55d(B)A was exceeded at five of the six locations monitored. Monitoring Point six (NM6) has been deemed a Noise Sensitive Location (NSL) and is the site of a mosque, the noise level here was recorded as being 55.2 dB(A), i.e., 0.2 dB(A) over the licence limit. However, the main sources of noise at this location are noted to be the adjacent stone yard operation and traffic on the Clare road. Operations at DB would be considered to be an insignificant contributor to noise levels at this location.

The standard noise emission limit values are maintained in the RD. The licensee is required to undertake an annual noise monitoring survey including proposals to reduce noise, where necessary.

## **Habitats`**

The installation is located on the outskirts of Ballyhaunis, Co. Mayo. The surrounding landscape comprises of undulating hills and valleys, with numerous lakes of various sizes. The installation is not located in an area that is liable to have any adverse effect on:

- a) a site placed on a list in accordance with European Communities (Natural Habitats) Regulations 1997, (Chapter 1 of S.I. No. 94 of 1997).
- b) a site where consultation has been initiated in accordance with Article 5 of the EU Habitats Directive (92/43/EEC), or
- c) a European site as defined in European Communities (Natural Habitats) Regulations 1997, (Article 2 of S.I. No. 94 of 1997).

Urlar Lakes, which lie approximately 10 km to the North of Ballyhaunis are the closest cSAC to the installation. It is deemed highly improbable that the operations will have any impact on this area.

## **Best Available Techniques (BAT)**

I have examined and assessed the application documentation and I am satisfied that the site, technologies and techniques specified in the application and as confirmed, modified or specified in the attached Recommended Determination comply with the requirements and principles of BAT. I consider the technologies and techniques as described in the application, in this report, and in the RD, to be the most effective in achieving a high general level of protection of the environment

having regard to the way the installation is located, designed, built, managed, maintained, operated and decommissioned.

### **Fit and Proper Person**

The legal, technical and financial standing of the applicant qualifies them to be considered Fit and Proper Persons.

### **Complaints:**

Odour complainants historically were very significant, more recently the number and frequency of complaints has reduced. Condition 5.6 of the RD requires a structured programme of odour management and control to be implemented. This programme will address all existing odour sources and provide a timeframe within which these issues will be resolved to the satisfaction of the Agency.

### **Submissions:**

One valid submission was received from Mr. Kevin Rogers, Western Regional Fisheries Board in relation to this application for a review. The main issues raised in the submission are summarised below and where appropriate under various different headings.

#### Loading to the River Dalgan:

Concern is expressed in relation to the on-going need for a reduction in nitrogen loading to the Dalgan in order to allow for improved water quality.

Inspector's Comment: The application (including additional information supplied) assesses the impact on water quality for the proposed development. This study assesses potential impacts of the activity on the Dalgan and outlines mitigation measures to be employed on site. The RD as drafted provides for a high level of protection to the receiving water body. The IR deals extensively with the issue of organic and nutrient loading. Furthermore, it is considered that the measures as proposed by the applicant in relation to site management and as outlined in the RD will lead to further reductions in any loading to the receiving waters.

#### Phosphorous Regulations:

Concern is expressed in relation to water quality in the river Dalgan, the submission questions whether the river will be in compliance with phosphorous regulation by the statutory deadline.

Inspector's Comment: The RD as drafted proposes ELVs for phosphates and orthophosphates in line with those stipulated in the Urban Waste Water Treatment Directive for sensitive waters (S.I. No. 254 of 2001). The limits see a reduction in Total Phosphorous limits from 3mg/l to 2mg/l as P.

As alluded to previously in this report a significant improvement in water quality in the receiving waterbody has been reported in recent years. The 2mg/l Total Phosphorous limit on the discharge will ensure that the standards for good water quality under the Local Government (Water Pollution) Act, 1977(Water Quality Standard Phosphorous) Regulations, 1998 are achieved.

Reporting of Incidents to the WRFB:

Concern is expressed that no incidents have been reported to the Board and it is unclear whether there have been no incidents or if they have not been reported.

Inspector's Comment: Condition 11.2 of the RD states *in the case of any incident which relates to discharges to water, the licensee shall notify the Local Authority and the Western Regional Fisheries Board as soon as practicable after such an incident.* Failure to comply with Condition 11.2 would be a non-compliance with licence conditions and could result in further enforcement action being taken by OEE. The matter has been referred to the OEE to deal with as non-notification and is an enforcement issue.

**Charges:**

The invoiced charge in 2006 was €14,073. The revised charge included in the RD is €13,331 and this reflects the monitoring and regulation at the installation under the RD.

**Recommendation:**

I recommend that the Recommended Determination be issued subject to the conditions and for the reasons as drafted.

Signed

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Breen Higgins

Inspector

Office of Licensing and Guidance

**Procedural Note**

In the event that no objections are received to the Proposed Determination of the review application, a revised licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Acts 1992 and 2003 as soon as may be.