
M E M O R A N D U M

DATE: 03 June 1998
TO: Each Board Member
FROM: Tony Dolan
RE: Application for an Integrated Pollution Control Licence from Liffey Meats (Cavan) Ltd - Kilquilly, Ballyjamesduff, Co. Cavan.

Reg No. 169.

Application Details	
Class of activity:	7.4; The slaughter of animals in installations where the daily capacity exceeds 1,500 units and where units have the following equivalents; 1 sheep = 1 unit, 1 head of cattle = 5 units.
Licence application received:	30/09/96
Notices under article 11(2)(b)(ii) issued:	28/11/96, 04/02/97, 19/02/98
Information under article 11(2)(b)(ii) received:	10/02/97, 10/03/97, 23/05/97, 16/06/97, 25/11/97, 30/01/98, 23/02/98, 25/03/98, 20/04/98.
Section 23 notice issued under WP Act 1977.	25/02/97
Section 23 response received	02/04/97, 12/09/97,
Section 26 notice issued under AP Act 1987.	17/07/97
Section 26 response received	20/08/97
Article 10 Compliance	20/04/98
Submissions received	23/10/96, 01/11/96, 04/02/97, 25/08/97, 04/09/97, 05/09/97, 03/12/97,
Site Visits	17/10/96, 27/01/97, 02/01/98, 22/04/98.

Company Profile:

The plant was constructed on a greenfield site in 1987. Additions were carried out over the last eleven years. The process consists of cattle intake, lairage, slaughter area, evisceration, fresh fat rendering, cutting/boning and packing/dispatch. Work at the plant normally starts at 7 a.m. and finishes at 2 p.m. and is usually carried out for 5.5 days per week and 52 weeks in the year. Total employment at the plant is around 220. Normal production is generally 2,000 - 3,000 cattle per week. Although existing lines would allow for the slaughtering of sheep, this is not currently carried out at the plant.

Water Emissions:

In 1985 Cavan County Council attached conditions to the company's' trade effluent discharge under section 4 of the Water Pollution Act. This licence specified tight limits, particularly for ammonia (0.7 mg/l), while the new plant BATNEEC limit specified is 10 mg/l, and the company have had major difficulties over the years in attempting to comply with some of their existing licence limits for ammonia, suspended solids, and fats in particular.

In February 1997 the Agency issued Liffey Meats with a section 23 notice under the Water Pollution Act requiring the company to submit proposals for the upgrading of the treatment plant to meet the BATNEEC levels specified for this sector. The result of an assessment of the WWTP by consultants employed by the company resulted in a number of recommendations being made, and the following works have been carried out to date;

- (a) The replacement of the existing DAF unit by a new unit which should, according to the company, increase the performance of fat and BOD removal by at least 100%.
- (b) The aeration capacity of the plant has recently been increased with the installation of a new balancing tank (2730 m³) and the conversion of the old balancing tank (680 m³) into an aeration tank. This will give a total aeration capacity of up to 3000 m³.
- (c) The swapping of aerators between aeration basin 1 and aeration basin 3 to improve the BOD removal capacity of both units.
- (d) The company are currently investigating the design specifications for a designated anoxic zone for nitrogen removal (denitrification).
- (e) A new clarifier to compliment the new aerator has been sized and will be installed in due course.

The company held discussions with Cavan Co. Council regarding the feasibility of directing their trade effluent discharge to the Local Authority sewer, but the Council considered that the design capacity of Ballyjamesduff WWTP would be unable to handle the hydraulic load from Liffey Meats. The outfall from Ballyjamesduff WWTP discharges to the Pound stream downstream of the Liffey Meats plant.

At Liffey Meats treated effluent is discharged to a drain referred to as stream A, which then flows into the Pound stream, and then into the Mountnugent river before eventually flowing into Lough Sheelin. This drain offers little dilution of the effluent discharge, but there is some regeneration in the water quality downstream, prior to entering the Pound stream. The company specified a maximum daily effluent flow in their application of 800 m³/day, while the daily flow figures submitted by the company as part of the monthly monitoring returns have indicated a daily effluent flow of around 400 m³/day. As the dilution available in the receiving waters for the effluent discharge is extremely limited, a maximum effluent flow of 450 m³/day has been specified in Schedule 1(i). Assuming a BOD of 20 mg/l, the BOD load generated at this maximum flow would be 9 Kg BOD/d. There is very little reliable data on the 95%ile flow, or BOD levels in the Pound stream upstream and downstream of the effluent discharge, but using a best estimate a BOD load of 1 Kg BOD/d would theoretically increase the BOD of the Pound stream by 1 mg/l. The Mountnugent river has a 95%ile flow of 0.09 m³/sec (EPA 1995) and thus in theory a BOD load of 7.8 Kg BOD/d would increase the BOD of this river by 1 mg/l.

The Pound stream drains the bulk of the lands used by Liffey Meats with three tributaries of note (streams A, C, and D) flowing through or adjacent to the Liffey Meats property from north to south into the Pound stream. The results of a Biological impact assessment (KT Cullen, 1992) indicated that the quality of the Pound stream, though initially of fair quality, deteriorates in the lower reaches after the confluence of the amalgamated flow of streams A and C which are of poor to doubtful quality. The lower reaches of the Pound are moderately polluted.

The EPA monitoring data on the Mounnugent river for 1997 has shown that the BOD and ammonia concentration recorded in the river were within acceptable limits, and the levels determined are broadly similar upstream and downstream of the confluence of the Pound stream with the Mounnugent river. However the company are required to carry out a water quality assessment (Condition 9.1.4) to assess the quality of the streams which pass through or adjacent to the Liffey Meats property, and to determine the impact of the effluent discharge (stream A) on the receiving waters which are the Pound stream and Mounnugent river.

This water quality assessment will involve monitoring the condition of streams A, C, & D which flow into the Pound stream, and stream B which flows into the Mounnugent river. The analyses carried out on these streams have indicated varying degrees of pollution in the past which have been linked to activities or waste disposal practices (lagoons) on site. If this water quality assessment indicates pollution of the streams arising from activities or disposal practices on site, then the company are required to submit proposals and procedures for the identification and the removal/remediation of any pollution source, subject to the agreement of the Agency (Condition 9.1.5).

Lagoons:

There are three lagoons on the property at present, including two adjoining lagoons (which have been filled to capacity and covered in) and which are identified in the application as lagoon No. 1. The lagoon currently in use (lagoon No. 2) is operating close to capacity. This lagoon is used for the disposal of fat rendering waste, and some sludge from the WWTP. As the dry matter settles to the bottom of the pit the liquid is pumped to a nearby sump, from where the liquid effluent is tankered off and landspread. The company intend to pump this effluent to the WWTP and are currently carrying out trials to determine whether the WWTP can adequately cope with this particular effluent.

Lagoon No. 2 was originally excavated to a depth of about 5 metres, while the water table is generally within 4m of the ground surface. There has been contamination problems in the past associated with the groundwater feeding the spring in the vicinity of lagoon No. 1 (KT Cullen, 1992). This situation was tackled by installing a deep trench between lagoon No. 1 and the spring to collect the contaminated groundwater, and pipe it to lagoon No. 2, from where the liquid effluent is eventually removed and landspread. The company are required to maintain groundwater monitoring wells in the vicinity of lagoons Nos. 1 & 2, and to drill additional boreholes around these lagoons in order to confirm the full extent of groundwater contamination (Condition 9.2.2). If the monitoring programme indicates that groundwater contamination is occurring due to leachate seeping from the lagoons, then the company are required to submit a planned programme (Condition 9.2.4) for the decommissioning and/or containment of these lagoons.

Hydrogeological setting:

The Mounnugent catchment area is characterized by its thin soil cover, poor drainage and undulating topography. The shales and sandstones would be considered to have little regional groundwater potential with most water wells recorded from this unit providing domestic or farm yields at best. Many wells have been drilled at the site with little success. The highest yielding wells to date supply some 30 m³/day. The measures specified under Condition 9.2 of the PD are considered sufficient to protect the groundwater in the vicinity of the lagoons, as it specifies that the containment of any contamination sources detected will be required.

Air Emissions:

Liffey Meats have two boiler houses on site, one of which is on standby. The main boiler (A11), is run on light fuel oil with a sulphur content of 1.0%. The company are restricted in the PD (Condition 5.1) to using a fuel oil with a maximum sulphur content of 1%, as there are some concerns as to whether the current stack height of

10 metres is sufficient for adequate dispersion. In addition the applicant is required to model the boiler emissions and implement any remedial measures necessary. Conditions 5.2, 5.3, and 5.4 of the PD specifically address this point.

There are also a number of generators (3) on site which operate for about two hours per day when the energy demands on site are at an optimum.

Odours: The Agency has received numerous complaints in relation to odours which were mainly associated with the treatment plant. As a result in July 1997 the company were issued with a Section 26 notice under the Air Pollution Act requiring an odour assessment for the prevention, limitation, and abatement of odours arising from the site, with particular reference to potential odours associated with the WWTP. The investigation of the WWTP resulted in a number of measures being implemented, such as the installation of a new DAF unit, and the installation of additional aeration capacity. The main cause of odour on site would appear to have arisen from the occurrence of septic conditions in the new balancing tank. This problem was alleviated by the installation of additional blowers in the balancing tank. These measures would appear to have helped to resolve the serious odour issue at this plant given that there has been no odour complaint for a number of months. No odour was detected by this inspector during a recent visit to the plant. The continuous assessment and development of better work practices on-site will remain a key component in preventing the recurrence of any significant odours off-site.

Surface Water Emissions:

The company have identified four surface water run-off points which discharge to streams A, B, and the stream south to river, which runs parallel to stream C. These discharges consist of runoff from the roof area of the plant. The company are required to carry out daily visual inspections and regular chemical analysis of these run-off points. In addition the company are required to examine the feasibility of reducing the number of surface water discharge points in the EMP.

Groundwater:

As stated above the company are required to maintain and monitor groundwater monitoring wells and drill additional boreholes in the vicinity of lagoon No. 1 (consisting of two adjoining lagoons filled to capacity and covered in), and lagoon No. 2 (the existing lagoon). The applicant is required to monitor the groundwater as set out in Schedule 4(i) for the parameters specified, and depending on the levels recorded the results may give a useful indication of whether leachate contamination from the nearby lagoons is infiltrating the groundwater. Other conditions designed to protect the groundwater include a requirement for integrity testing of the concrete pits used for fat storage, and the WWTP tanks.

Noise emissions:

Liffey Meats are required to meet the 55 dB(A) day and 45 dB(A) night standards at the nearest noise sensitive locations. The company have not received any noise related complaints to date.

Waste Management:

Waste oil from the refrigeration plant (0.002 t/a) together with lubricating oils from the routine service of compressors and gear boxes (0.03 t/a) are collected by Atlas oil for recovery. Any infectious waste generated on site must be sent to a specialist licensed rendering facility. Blood and offal are collected and sent off-site for rendering. Waste fat from the fresh fat rendering operation is stored in lagoon No. 2. Other wastes from the operation include domestic type refuse, and plastic liners and cardboard boxes which were previously burnt on site but which must now be sent off site for disposal, as set out in Condition 5.8.

The company are required to address the issue of adequate organic waste storage capacity in their EMP. The applicant is also required to submit a comprehensive

NMP within two months of the date of grant of the licence detailing the available landbank and the quantities of sludge, slurry, and paunch generated on site for disposal each year. Landspreading activity is controlled under Condition 7, and by Schedules 2(iv), (v), and (vi) of the PD. The company are also required to carry out a Groundwater Vulnerability Assessment of the landspread areas (Condition 7.5.9).

Complaints:

There has been more than 30 complaints registered by the Agency concerning foul odours arising from the site. The issues raised in these complaints are dealt with in the section dealing with submissions.

Prosecutions:

The company have been prosecuted and successfully convicted on numerous occasions (21) by the Shannon Regional Fisheries Board, and on a number of occasions by Cavan County Council, for breaches of the Water Pollution Act and for offences committed under the Fisheries Act. The company have been prosecuted by the Agency on two occasions. The first prosecution in June 1997 was for two breaches of the Water Pollution Act in relation to discharges to waters which occurred in November 1996, and January 1997. The second prosecution taken in February 1998 related to a breach of the Water Pollution Act in July 1997, and for failure to practice adequate blood recovery and to store offal bones and hides as required under the terms of their single media licence which occurred in August 1997. However there has been a gradual improvement in the performance of the WWTP over the last few months, and in particular the reduction from around 160mg/l down to less than 10 mg/l in the ammonia discharge concentration levels is a significant development.

Submissions:

There were seven submissions received, including four from the Ballyjamesduff Community Council or local residents associated with the Community Council, and one each from the Department of the Marine, Cavan County Council, and the North Eastern Health Board.

1 - 4. Community Council & Local Residents:

The submissions received from the Community Council and local residents highlighted an on going problem with smells arising from either the treatment plant or from the landspreading of blood or slurry on fields adjacent to the plant. The intensity of these smells would appear to have increased from the summer of 1996 right through to the Autumn of 1997, as the smells were becoming more frequent and prolonged. The residents have called for more regular monitoring of the situation by the Agency, and they have stated their formal objection to the granting of the licence until such time as the odour problems have been fully resolved.

Response:

The company were initially asked to submit to the Agency a weekly log of the odour situation in the environs of the plant, which involved recording the wind direction and intensity of the odour where applicable. This log was intended to be used by the company to identify the source of any odours detected, and to implement appropriate remedial measures where possible. In addition the company were issued with a Section 23 notice under the W.P. Act, and a section 26 notice under the A.P. Act, and the recommendations contained in their consultants reports are currently being implemented by the company. The problem of odours generated from the WWTP would appear to have been addressed by the installation of additional blowers in the new balancing tank which has reduced the occurrence of septic conditions and associated smells in this tank.

In relation to the landspreading of blood in the fields adjacent to the plant, the NMP submitted by the company have indicated that the P levels in the soil in the fields adjoining the plant are greater than 15 mg/l, and as such these lands will not be used for spreading organic waste for this year at least. This should reduce the likelihood

of odour complaints from local residents. The company are prohibited from spreading blood.

5. Department of the Marine:

The submission received from the Department of the Marine emphasized that the discharge is within the highly sensitive Sheelin Catchment and that every effort must be made to minimise phosphorous loading in view of the low dilutions likely at low flows. The Department of Marine state that the Shannon Regional Fisheries Board have reported poor performance of the treatment plant, inadequate sludge disposal, and referred to an incident concerning the infiltration of the underground drainage system allegedly related to the landspreading of blood. They recommend that stringent conditions should be applied and enforced.

Response:

The WWTP has recently been upgraded to include a new balancing tank, a new DAF unit, the conversion of the old balancing tank into an aeration tank, and the switching of aerators between tanks to maximize the aeration efficiency in these tanks. In addition the company are in the process of designing an anoxic tank for denitrification. The company are required to meet new plant BATNEEC limits for phosphorous emissions within 2 years, while the existing discharge levels are already close to these BATNEEC limits. High ammonia discharge levels has been a major problem for a number of years, though the increased aeration capacity has lead to a gradual reduction in ammonia levels. The company are initially required to meet new plant BATNEEC limits for ammonia, while a tighter discharge limit of 5 mg/l must be met within two years, owing to the limited dilution available. The reduction in ammonia levels has resulted in a corresponding increase in nitrate levels and this problem will need to be tackled as a matter of urgency, by the installation of an anoxic zone or some other equally effective abatement technology. This issue is included as one of the items to be addressed in establishing the Schedule of Objectives and Targets of the EMP.

The problem of low dilutions during low flow conditions in the receiving waters is of particular concern. The EMP includes a number of objectives such as the reduction of the ammonia load to the WWTP and a continuous improvement in the operation of the WWTP. The company are also required to assess the impact of the effluent discharge on the receiving waters (Condition 9.1.4). Depending on the results of this assessment the company may need to consider measures such as diverting the effluent discharge during periods of low flow and sourcing alternative disposal options if feasible, such as landspreading the treated effluent during this period (Condition 9.1.5).

The problem of sludge disposal shall be addressed in the NMP, while the provision of adequate storage for lairage, paunch, and sludge is to be addressed in the EMP. The landspreading of blood is prohibited.

6. Cavan County Council:

This submission referred to numerous complaints received by the Council regarding an odour problem at Ballyjamesduff which was investigated by the County Council. The Council had received a number of complaints in relation to another facility which is located next to the Liffey Meats plant. This submission contains an engineer's report on the investigation undertaken by the Council, which concludes that Liffey Meats is primarily responsible for any odours generated in the vicinity.

Response:

The Agency received numerous odour complaints over the course of 1997, and in particular during the Summer months. This problem was complicated by the fact that the local residents were also making complaints to Cavan County Council concerning odours generated from Phoenix foods which lies adjacent to Liffey Meats. However after fairly extensive investigations the main source of odour was narrowed down to the new balancing tank at Liffey Meats. The installation of additional aeration would

appear to have solved the odour problem from this particular source at least. The Agency informed Cavan County Council of the steps undertaken by Liffey Meats to source and tackle the odour problem.

7. North Eastern Health Board:

This submission contained a number of recommendations which are summarised as follows:

- (a) **Effluent:** The WWTP to be upgraded to the EPA standard within a specified deadline, the effluent drainage system to be maintained in good working order, and effluent pump sumps to be fitted with high liquid level alarms. The use of the lagoon at the rear of the factory to be discontinued within a specified deadline.

Response:

The company are required as a minimum to meet new plant BATNEEC limits for all the parameters specified in Schedule 1(i) within two years. The company are required to upgrade or replace the effluent receptor pipe (Condition 6.5), and to install high liquid level alarms on pump sumps within twelve months. In addition the company are required to submit a groundwater monitoring report (Condition 9.2.3) and if the results indicate that there is leachate contamination from the lagoons, the company will be required to submit a programme for the decommissioning and/or containment of the lagoons in question. In addition the company are required to address the organic waste storage capacity in their EMP.

- (b) **Wastes:** This highlights a number of issues for inclusion in the licence, where good housekeeping procedures around the plant are required. This includes a recommendation that all by-products are hygienically stored to prevent odour and pest problems, that rendering of fat takes place within 24 hours of its production, and that adequate cleaning procedures are put in place for cleaning of yards, containers etc. All containers/trailers used for storing offal, bone, and hide should be covered and be watertight. No waste to be burned on site without the prior approval of the Agency.

Response:

The company are required to ensure that all operations on site shall be carried out in a manner such that odours will not result in significant impairment beyond the site boundary (Condition 5.6). Condition 7, which deals with Waste Management, contains a number of conditions which are specifically designed to ensure that waste disposal practices at the company are properly regulated and controlled. The company were burning cardboard boxes and plastic lining in a furnace on site until recently, but this practice has been discontinued and details of an alternative recovery/disposal contractor to be agreed with the Agency is required under Condition 5.8 of the PD. All gullies and drains in the yard area of the plant are to be kept free of solid blockages (Condition 9.3.2).

- (c) **Landspreading:** All landspreading to be carried out in accordance with a suitable NMP, and in compliance with the Code of Practice for landspreading.

Response:

The company are required to submit an NMP within two months of the date of grant of the licence, detailing the available landbank and the quantities of sludge, slurry, and paunch generated on site for disposal each year. Landspreading activity is controlled under Condition 7, and by Schedules 2(iv), (v), and (vi) of the PD, which incorporates the Code of Practice for Landspreading.

- (d) **Storm Water:** Clarify whether uncontaminated storm water and any uncontaminated process waste water discharge the foul drainage system.

Response:

All foul water generated on site is diverted to the WWTP, as is any yard run-off. Similarly all process waste water is diverted to the WWTP. The surface water run-off from the roof of the building is diverted to surrounding drains and streams.

(e) **Ground Water:** An adequate assessment of the risk of pollution of groundwater is recommended along with the implementation of an appropriate groundwater monitoring programme. The water tightness of waste/effluent storage tanks should be tested.

Response:

The PD contains a number of requirements under Condition 9.2 which includes regular groundwater monitoring particularly in the vicinity of the on site lagoons, and the implementation of a programme to isolate and contain the source(s) of pollution where necessary. In addition there are a number of requirements under Condition 9.3 which include measures such as bund testing, underground tank and pipeline testing, and the testing of the fat storage tanks and all WWTP tanks.

(f) **Noise:** The NEHB have included the following recommendations;

<u>Time</u>	<u>Limit</u>
08.00 - 18.00	Leq (60 minutes) 55 dB(A)
18.00 - 08.00	Leq (15 minutes) 40 dB(A)

Response:

There have been no noise complaints to date as a result of the activities carried out on site. The normal hours of operation at the plant are from 07.00 - 14.00 hours. The noise conditions included in the PD specifies that activities on site shall not give rise to noise levels off site which exceed 55 dB(A) - day, and 45 dB(A) - night at noise sensitive locations, with a 2 dB(A) deviation allowed for compliance measures from an existing activity.

Recommendations:

The main concerns involved in reaching a recommendation on this PD, was the available waste assimilative capacity of the receiving waters, especially considering the high ammonia, suspended solids, phosphorous and nitrate levels in the treated effluent to be discharged and the requirement to ensure compliance with the legislation [specifically the EPA Act, 1992 Section 83.(3)]. Odour control is also a very serious and highly relevant issue.

Licensing of this facility and in particular the effluent discharge to water should result in a sustained improvement in the quality of the discharge and a gradual reduction in the impact on the receiving environment. The company are required as a minimum to meet new plant BATNEEC limits for all the effluent discharge parameters listed in Schedule 1(i) within two years.

I am recommending that the Board approve the Proposed Determination with the conditions as attached.

Signed

Tony Dolan