
M E M O R A N D U M

DATE: 14 May 1999
TO: Members of the Board
FROM: James Moriarty
RE: Golden Vale Food Products Limited (Reg. No. 386) - Application for IPC licence.

Application Details	
Applicant:	Golden Vale Food Products Limited
Location of Activity:	Rathgoggan Middle, Charleville, Co. Cork.
Class of activity:	7.2 - the manufacture of dairy products where the capacity exceeds 50 million gallons of milk equivalent per year.
Reg. No.:	386
Licence application received:	06/03/98
Notices under article 11(2)(b)(ii) issued:	02/10/98
Information under article 11(2)(b)(ii) received:	03/11/98; 11/12/98; 17/12/98
Article 14 notice issued:	06/04/98
Article 14 information received:	03/06/98; 30/07/98; 13/08/98; 03/11/98
Article 17 notice issued:	12/02/99
Article 17 compliance	04/03/99
Request for additional time under Article 18(2)	27/04/99
Consent to Agency request for additional time	28/04/99
Submissions Received	Dept. of Marine and Natural Resources Environment Section, Limerick County Council Duchas - the National Heritage Service Cork County Council
Site Visits (including landbank assessment)	13/02/98; 08/02/99; 10/05/99

Company Profile

Golden Vale plc is a food company with operations spanning the manufacture and sale of a range of dairy-based products for national and international retail as well as industrial and catering markets. Group activity is split into three business areas; Cheese, Butter and Milk Powder and Other Businesses. It operates from locations throughout Ireland, Great Britain, Holland and Denmark and its market is a global one.

Golden Vale Food Products Ltd at Charleville, Co. Cork is the headquarters of Golden Vale plc. Extending to 81 acres, activities on the site commenced in 1948 and there are currently circa 450 full-time employees and production activities are on-going on a continuous basis, 24 hours per day, seven days per week. There is a reduction in the level of activity on the site during the

winter when milk related operations are confined to certain days of the week or stopped completely.

Currently, milk processing levels are of the order of 400,000m³ per annum with a product mix of butter, yellow fat spreads, milk powders and cheese products. The distribution of products is market dependent and varies from year to year.

An EIS was prepared in support of a planning application for the upgrading of the effluent treatment plant. This document was assessed under Article 25 of the regulations and found to be in compliance insofar as it relates to the risk of environmental pollution.

Process Overview

Milk is delivered to the site by bulk tankers from suppliers farms, collection points and third parties. Each load is weighed and sampled before being pumped to one of six milk silos where it is held until required by production. Storage capacity of the silos is 360,000 gallons. Main process unit operations on the site are Separation, Butter processing, Yellow Fat Spreads, Milk Powder, Cheese Plant.

Separation

Separation is where whole milk from the silos is separated into cream and skim milk. Separation is by means of high speed rotating discs with holes closely stacked on top of one another. This action results in cream collecting in the middle of the separator and skim milk at the outside. The majority of the cream produced goes for manufacture into butter and the skim milk goes to the Powder plant for drying.

Butter Processing

Three types of butter are produced - Salted sweetcream butter, unsalted sweetcream butter and unsalted lactic butter. The cream is churned (mechanically worked) into buttergrains and buttermilk. Any ingredients (salt or lactic acid) are well mixed in the churning process. Buttermilk, a natural by-product of the process, is separated and recovered.

Yellow Fat Spreads

This plant manufactures and packs a range of table spreads and margarines. The main raw material is Vegetable oils which are delivered by road tankers into bulk storage. Some oils come in block form and are melted in melt tanks as required. Butter for use in the spread recipes comes from cold storage and is melted in the melt tanks. Additives (colourings, flavours etc) are made up and all material, in correct proportions according to the recipe in use, is fed to a weigh tank. After mixing, the product is pasteurised and cooled before packing.

Milk Powder

A wide range of powders are produced on site including skim milk powders (SMP), full cream powders, fat filled milk powders, cheese and yoghurts powders as well as animal food products. The process is a two stage one - first the skim milk is passed through an evaporator where it is concentrated from 8% solids to 48% solids. There are four evaporators on site which use a thermal vapour recompression cycle to utilise the energy liberated to maximum and thereby minimise steam input requirement for evaporation of the water contained in the skim milk.

The site has five dryers with a total drying capacity of 10.5 tonnes per hour. Here the concentrated skim milk from the evaporators is dried. Some of the concentrate may also be blended with ingredients from the fat storage area to produce the fat filled milk powder range of products. The manufacture of cheese and yoghurt powders does not require evaporation - rather the solutions are prepared and fed to the drier feed tank for homogenisation before being dried. Three of the five driers are fitted with additional burners in order to reach the high temperatures required of circa 200°C. One drier has a dedicated high pressure boiler servicing it and this is sufficient to reach the process air temperature required. The Powder Milk drier operates at a lower temperature and the standard steam pressure can satisfy the heating duty required.

Cheese Plant

The Cheese plant has two main products; Processed Cheese Products (cheese spreads, blocks of cheese etc) and a natural cheese product known as "Cheestrings". Raw natural cheese is purchased and blended with flavours before being transferred to a cooker. Here the cheese is cooked by means of direct contact with heated water. After cooling, the cheese product is cut, packaged and stored.

Site Services

Boiler House

The Boiler House provides steam for the entire site. There are four boilers in use with one redundant boiler. All of the boilers are fuelled by Natural Gas and a Programmable Logic Control system is used which starts or stops a boiler based on actual and anticipated steam demand. A Combined Heat & Power (CHP) plant is proposed for the Golden Vale site. The PD, as drafted, has made provision for this addition.

Compressed air for use across the site is provided by two Atlas Copco oil free compressors. The compressed air facility was centralised to one location in 1990 to minimise noise nuisance. Air at 7 bar is available for Motive Power (valves, presses, agitators) and Conveyance by means of air purging.

Softened Water Plant

The mains water has high levels of calcium and magnesium salts leading to a "hard" water. This water is not suitable for use in heat transfer applications etc and so a softened water plant is used. The plant consists of two water softeners with cathodic exchanger resins, a salt saturator, a brine tank and a plc control system. The calcium and magnesium salts are exchanged with sodium from the resin, giving softened water. When the resin is saturated it is regenerated with a brine solution which removes the Ca^{2+} and Mg^{2+} from the resin, replacing the sodium so that another cycle can commence. Backwash during regeneration is sent to drain.

Cleaning in Place (CIP) system

The plant is equipped with an extensive network of CIP systems. Areas of the plant which have dedicated CIP include;

- Lorry Wash
- Separation and Milk Intake
- Butter Processing
- Yellow Fat Spreads
- Evaporator
- Cheese Plant

The CIP cycles comprise of rinses with hot and cold water as well as caustic rinses. Some of the CIP systems have automatic additions to detergent tanks. Approximately every two months each CIP circuit is washed with sterilant (Nitric Acid) to de-scale the system. Where cream lines are involved, the final rinse of the cycle has a Peracetic acid rinse.

Ancillary Activities

A Central Laboratory provides a site-wide service for Quality Control purposes. There are also some buildings on site leased to other companies. None of these leased units generate any emissions which require attention in the IPC licence.

Proposed Determination

Emissions to Atmosphere:

The company have no existing licence under the Air Pollution Act. The principal emissions to atmosphere can be divided into two main categories:

- (i) flue gas emissions from the boilers
- (ii) particulate emissions from the driers.

The four boilers, as well as the three burners on the driers, are all fuelled on Natural Gas. The company have requested that the facility to burn Heavy Fuel Oil in the boilers be retained. As this request is made primarily to avoid a monopoly situation with one fuel supplier, the PD, in Condition 5.5, requires the prior written agreement of the Agency before any fuel other than Natural Gas can be used. This agreement is contingent on the company demonstrating that the use of fuel oil will not breach any Air Quality Standards as set out in S.I 244 of 1987.

The company have applied for planning permission to construct a Combined Heat and Power (CHP) plant on site. The 4.9MW rated waste heat boiler associated with the CHP plant will be capable of supplying all site steam requirements with the exception of Niro 1 Drier. The existing Boiler No. 1 will continue to generate steam for this unit. In the unlikely event of steam requirements exceeding CHP ratings, one of the other three natural gas fired boilers will be used. The CHP plant is expected to be operational by December 1999 and a 98% uptime is envisaged.

The exhaust gases from the driers contain particulates and cyclone abatement is used to control particulate emissions. The emissions (post cyclone abatement) are illustrated in Table 1 below.

Table 1 - Particulate emissions					
Emission Point	Source	Particulates			
		On Skim Milk Powder		On Fat filled powder	
		mg/m ³	kg/hr	mg/m ³	kg/hr
AEP10	Niro 1 Drier Stack	193	3	11.5	0.31
AEP11	Niro 2 Drier Stack 1	695	2	5.13	0.021
AEP12	Niro 2 Drier Main Stack	360	27	12.4	0.926
AEP13	Niro 2 Drier Stack 2	687	12	2.43	0.003
AEP14	Niro 3 Drier Stack	264	7	31.79	0.77
AEP15	Niro 4 Drier Stack (cheese powder drier)	5	n/a	0.045	n/a

Each drier has a bank of cyclones sized and arranged to ensure optimum particulate removal efficiencies. The Niro 2 drier has four cyclones and three emission points to atmosphere. The rest of the driers, while having different numbers of cyclones ranging from 2 to 7, have a single emission point. As can be seen from the figures, when the driers are operated on products with a higher fat content particulate emissions are significantly reduced. This is because fewer fines are released from the drying chamber.

Impact of Atmospheric Emissions

The new plant BATNEEC figure for particulate emissions from this sector is 50mg/m³. It is evident that this plant is not reaching these standards. In assessing the impact of particulate emissions from the site, the applicant carried out both dust deposition and dispersion modelling assessments. The dust deposition study measured the deposition at five locations around the boundary using the Bergerhoff method of analysis. The results indicate that measured deposition of a maximum of 290mg/m²/day is inside the mean daily limit value of 350mg/m²/day recommended in T.A. Luft.

The Industrial Source Complex Short Term (ISCST3) model was used by the applicant to assess the impact of boiler and drier emissions on the ambient environment and the modelled results are presented below. A comparison with the national Air Quality Standards specified in S.I. 244 of 1987 is included. It should be pointed out that the model was based on worst case emission data assuming all sources to be emitting maximum amounts at the same time. The installation of the CHP plant will result in a reduction in predicted NO_x levels to 108µg/m³.

Source	Substance	Model Prediction (µg/m ³)	Air Quality Standard S.I 244 OF 1987 (µg/m ³)
All Boiler Stacks	Nitrogen Dioxide	115 ¹	200 ¹
All Drier Stacks	Suspended Particulates	83 ²	250 ²

1 98%ile of mean hourly value

2. 98%ile of daily values

The maximum predicted GLCs for all averaging periods were within the relevant air quality standards. There is a proposed EU standard for of 50µg/m³ 24 hour average value. PM₁₀ represents particles less than 10µm in diameter. There is a 50% tolerance proposed which would allow for ambient PM₁₀ levels to reach 75µg/m³ with a phased reduction to reach 50µg/m³ by 2005. Based on the particle size distribution of Skim Milk Powder, the proportion of PM₁₀ are estimated at circa 80% of suspended particulates. The current emissions (estimated ambient

PM₁₀ 66µg/m³) do not, therefore, exceed the proposed 75µg/m³ standard with the PD requiring the company to assess its particulates emissions for PM₁₀ and report to the Agency. In the event of Heavy Fuel Oil being used in the boilers, Condition 5.5 requires that the statutory air quality standards in SI 244 of 1987 be complied with. This will ensure Sulphur Dioxide emissions will be adequately controlled.

Current Vs BATNEEC

The company have stated that it is not possible to attain new plant BATNEEC figures of 50mg/m³ for particulate emissions using the cyclone abatement technology. The cyclones have been in use since the early/mid 1970's and normal lifetime is expected to be around 30 years. The company has committed to replacing the cyclone system of particulate abatement with one capable of meeting new-plant BATNEEC standards when the equipment train is being upgraded.

Teagasc Moorepark, who developed the continuous loss stack monitors based on Infra Red monitoring, have stated, based on their experience in a wide range of dairy industries, that the best performance the cyclone abatement system can be expected to deliver is 250mg/m³. Only the Niro 2 Drier exceeds this industry norm. The company plan to move Skim Milk Production away from Niro 2 onto either Niro 1 or 3 which are capable of attaining the 250mg/m³ standard. This would have the effect of reducing particulate emissions from the site as the more efficient driers would be used more. The PD, in Condition 5.6, requires the company to schedule operations in such a way as to minimise the time that Niro 2 is used on Skim Milk Powder. In this manner, it will be possible to minimise particulate emissions by using the more efficient equipment on the higher particulate loadings.

Having assessed the information to hand, it is considered that there are potential significant cost implications arising from forcing the company to attain the new-plant BATNEEC level of 50mg/m³ for particulate emissions from the dryers. Given that current emissions do not result in ambient levels which exceed statutory levels, it is recommended that the company prepare a report assessing the technology options required to attain BATNEEC levels and submit this to the Agency within 12 months of date of grant of licence. This will enable an assessment based on BATNEEC to be undertaken by the Agency and allow for an agreed programme of improvement.

Minor Emissions to Atmosphere

The applicant includes emissions from cooling towers, evaporator condensers and ventilation systems as minor atmospheric emissions. Data supplied on particulate emissions from dust extraction units fitted to two Yoghurt and Milk Powder Mixers show these are minor (<1mg/Nm³)

Odours

The Agency has received no odour complaints in relation to the manufacturing and Waste Water Treatment Plant (WWTP) operations at this facility. The EIS for the upgraded WWTP identified a number of sources with the potential to cause odour nuisance. The mitigation proposed is a biofilter and its operation is regulated in Schedule 1(ii) of the PD.

Emissions to Sewer:

As well as a number of sanitary effluent discharges, the company discharge small quantities of trade effluent to the Cork County Council sewer from a laboratory. This effluent arises from the testing of milk and consists of approximately 25 litres of milk per day. Chemicals used in the testing procedures had also been discharged to sewer and the sanitary authority were advised of this effluent and their comments sought. The Section 97 response stipulated that the chemicals used should be segregated and not discharged to sewer. The PD prohibits discharge of milk testing chemicals to drain. No monitoring of the discharge is proposed and the waste chemicals are to dealt with in accordance with Schedule 3(i) of the licence.

The uncontaminated water from a diesel oil interceptor currently goes to the public sewer. In accordance with Cork County Council's wishes, the company are given six months to cease this discharge.

Emissions to Water:

The company discharge treated effluent to the Charleville Stream under licence from Limerick County Council. This licence dates from 1978 and permits discharge to the stream in proportion to the flow rate of the stream waters. As seasonal low flows in the stream correspond with peak production period, the company has a number of lagoons for effluent storage (approx. 600,000m³ capacity) where effluent is accumulated until such time as there is sufficient assimilative capacity in the stream to cater for the effluent as per licence conditions.

WWTP

The effluent treatment plant is located on Golden Vale property some 2.3km away from the dairy plant itself. A new pipe was laid for effluent transfer in 1992. The system is a combination of aerobic ponds, facultative ponds and maturation basins - collectively known as the "Landnet System".

There are 10 basins in the effluent treatment plant:

Basins 1&2	Aerobic ponds. Surface cones provide mechanical aeration and up to 90% BOD Removal can be achieved by converting waste water organics to microbial floc.
Basins 3&4	Facultative ponds. In the top layer of the pond there are aerobic micro-organisms and plankton, in the bottom layer there are anaerobic conditions and the middle layer contains facultative micro-organisms. All of the organisms are active in breaking down the waste matter. The waste is stabilised and photosynthesis produces oxygen which promotes oxidation of the organic matter. BOD is converted to micro-organisms, algae and zooplankton. The incoming microbial floc settles out and is recycled biologically
Basins 5,6&7	Early Maturation Ponds. Aerobic condition exists throughout and these act as polishing lagoons in which the quality of the effluent, particularly Suspended Solids, is improved.
Basins 8,9&10	Late Maturation Ponds. Aerobic conditions exist throughout and these act as polishing lagoons in which the quality of the effluent, particularly Suspended Solids, is improved.

The existing Effluent Treatment Plant is not capable of consistently producing an effluent in compliance with either their existing licence or the Emission Limit Values specified in the BATNEEC Guidance Note for the sector. The company have received planning permission from Cork County Council for the modification of the WWTP. The revised plant will be based on Single-Stage Aeration and will comprise of Preliminary, Secondary and Tertiary stages in conjunction with a Sludge treatment step.

Preliminary Stage	New concrete balancing tank, aerated by means of a floating aerator. Capacity of 12 hours effluent flow. Scum removal device for removal of floating solids. A twin cell Dissolved Air Flotation (DAF) unit will remove Oils, Fats & Grease (OFG). OFG float will be further treated (see Sludge Treatment below) with the flow from the DAF unit itself being directed to the Secondary Stage.
Secondary Stage	To take place in existing lagoons. Two lagoons to be used with the first one operating as an anoxic reactor and the second as an aerobic reactor. The aerobic reactor will remove BOD while providing optimum conditions for nitrification. The nitrate nitrogen formed will be de-nitrified in the anoxic lagoon using raw wastewater as the carbon donor. Mixed liquor from the aerobic lagoon will be overflowed to the existing final clarifiers. In-line addition of ferric salts will be used to facilitate precipitation of phosphorous with the bio-solids in the final clarifiers. Sludge will either be returned to the secondary stage or wasted to the sludge thickening and dewatering system.

Tertiary Stage	Tertiary stage will involve a rapid gravity filtration system with 4 parallel filter units. There will be a fully automatic backwashing system incorporating clean water and an air scour.
Sludge Treatment Stage	OFG Float and Sludge from the clarifiers will be treated here before disposal. The OFG float will be dewatered in a decanting centrifuge before being stabilised by the addition of lime. The excess sludge from the biological system will be drawn off on a regular basis for thickening in a picket fence thickener to 1.5% solids. With polyelectrolyte addition the decanting centrifuge can be used to concentrate the sludge to 18% solids.

The Charleville stream, to which the effluent discharges, is joined by another small stream, the Helena, about 200 metres downstream of the effluent discharge point. The confluence with the River Maigue is approx. 1.5km further downstream.

The 1994 EPA biological survey assigns a Q2-3 rating to Station No.'s 500 and 800. These are adjacent to the discharge of treated effluent from the storage lagoons into the Charleville Stream. This indicates a water of poor to doubtful quality with a low or significantly reduced diversity of faunal groupings. The Charleville town sewage treatment plant discharges to the Charleville Stream upstream of the Golden Vale discharge. The Q rating for the stream upstream of the company discharge but downstream of the town sewage outfall is also 2-3. There is no Water Quality Management Plan for the Charleville Stream.

In assessing the significance of the impact of the discharge from the Golden Vale WWTP, one has to, in the first instance, have regard to BATNEEC. While the Charleville Stream is not a designated salmonid water (as per First Schedule of SI 293/88) the water quality standards set out in these regulations are considered to be a long term objective for the stream. The company propose to comply with the Water Quality Standards for Phosphorous Regulations S.I 258 of 1998 by means of an improvement of the biological quality of the stream rather than by meeting targeted Phosphorous levels. They argue that the installation of an effluent treatment plant designed to comply with new plant BATNEEC standards represents BATNEEC for the site.

The PD includes, from July 2000, at least new plant BATNEEC levels for treated effluent. In recognition of the limited dilutions available in the receiving water, the company are required under Condition 6.10 to report to the Agency on the feasibility of piping the effluent directly to the River Maigue. In light of the fact that the local authority treatment plant discharges to the same receiving water, the company are required to consult with Cork and Limerick County Councils. This allows for a co-operative approach to be taken.

The new plant BATNEEC ELV for Toxicity is 5TU. In accordance with the practice of requiring 20 dilutions for each Toxic Unit, the limit in the PD is set at 1.5TU.

Summary & Approach taken in PD

The water quality in the stream is poor and not sustaining aquatic life at the moment. An improvement in the quality of the Golden Vale effluent will improve the situation but upstream discharges from the sanitary WWTP means that a co-operative effort is required if a real improvement is to be effected. The conventional practice of using assimilative capacities to determine impact is difficult to apply here as the flows in the receiving waters are so small.

It is not considered acceptable to continue the practice of allowing the flow in the Helena Stream count when calculating dilutions. This is because the confluence is 200m downstream and this is well outside the mixing zone. It is considered necessary to protect the section of stream between the discharge and the confluence with the Helena Stream. In not allowing this flow to count towards dilutions, there will have to be a more carefully managed effluent discharge strategy implemented by the company. Additional effluent storage may also be required and it is possible that the lagoons currently being used for treatment could be used for storage in future.

The option of piping the effluent to the River Maigue would, if implemented, have a major effect and possibly lead to the re-establishment of aquatic life in the Charleville Stream. The company' propose to demonstrate compliance with the Phosphorous Regulations by attaining Biological Water Quality (Q-value) improvements and also to upgrade the WWTP to at least new-plant BATNEEC standards.

Based on all the above, the approach in the PD is as follows

- Allow the discharge to the Charleville Stream only if compliance with Phosphorous Regulations can be demonstrated. If this cannot be done, the discharge is prohibited. Biological Water Quality monitoring is required to demonstrate compliance.
- Upgrade WWTP to attain new-plant BATNEEC standards
- Use only the flow in the Charleville Stream for calculation of dilutions (not Helena Stream)
- In consultation with Cork and Limerick County Councils, require the company to investigate feasibility of pumping treated effluent to River Maigue

Surface Water & Groundwater

There is a surface water body known as the Mill Race which runs through the factory site and it had been a cause of concern due to persistent contamination. Since 1991 a major project has been undertaken to identify the sources of effluent and redirect foul effluent to the WWTP etc. A dye survey was undertaken and pipe network studies carried out. About 80% of the works identified have been carried out and this has led to a significant improvement to the water quality in the mill race. Surface Water discharge monitoring set in the PD continues the approach adopted by the company in collecting two composite samples daily from the Mill Race upstream and downstream of plant discharges. The company is required to continue the Mill Race Rehabilitation programme and report to the Agency on its implementation as part of the AER.

The company are required to submit a proposal to the Agency on integrity testing of the milk storage tanks with the agreed testing to be repeated every three years.

The WWTP lagoons (both treatment and storage) are unlined and therefore pose a threat to groundwater. Information submitted by the company indicates that there is a low risk of groundwater contamination from the WWTP. The results of percolation tests carried out indicate very low permeability material in the base of the lagoons and the groundwater monitoring analyses from two purpose-drilled boreholes showing good quality groundwater. Schedule 4(iii) requires the applicant to conduct quarterly monitoring of groundwater quality at three points in and around the effluent treatment plant.

There was an historical incident of spillage from the 2.3km effluent pipeline and it is considered necessary to require the applicant to carry out an assessment of this pipeline in Condition 10.4.6.

Standard conditions requiring the company to agree monitoring programmes for surface waters and wells within the landspreading areas are included in the PD.

Waste Management

Hazardous waste generated on site consists of fluorescent tubes, spent batteries, waste oil and laboratory waste. Microbiological plates are used in milk testing and are sterilised before disposal. Laboratory chemical wastes are to be taken off-site by approved waste contractors. Non-hazardous waste (paper, pallets, domestic wastes) are disposed of to landfill by permitted haulier.

The installation of an upgraded WWTP will result in the generation of almost 12,000m³ of sludge each year. The applicant proposes to landspread this organic waste on lands in Counties Cork and Limerick. The proposed landbanks for spreading were the subject of an assessment and a Nutrient Management Plan was prepared. The landbank is spread over 32 different farms consisted of circa 2400Ha. When unsuitable areas were excluded (presence of rock outcrop, insufficient subsoil cover, boggy land etc), 23 farms with a usable area of 1300Ha were deemed suitable for landspreading of organic waste.

An aquifer vulnerability assessment for the proposed landbanks was undertaken. This was undertaken using the Geological Survey of Ireland (GSI) guidelines. A desk-top survey was conducted to determine soil characteristics for the area and this was backed up by extensive trial-pitting work to determine soil-subsoil type and thickness. The data presented indicates that the landbank (with deductions) can cater for 26,850kgs of Phosphorous per year. The estimated Phosphorous that will be generated by the company amounts to 27,000kgs per year.

The landbank assessment undertaken by the applicant identified a number of areas which require specific management in so far as the application of cordon sanitaires to features such as raths, watercourses, schools, churches, location and protection of private wells etc. These will

have to be addressed by the applicant in the formulation of a detailed Nutrient Management Plan for agreement with the Agency as required in Condition 8.4.4. An organic waste register is required in Condition 8.5 which will provide an accurate quantification of organic wastes destined for landspreading. The landspreading is required to be carried out in accordance with established Codes of Practice and recognising appropriate Buffer Zones as set out in Schedule 3. Under the EMP, the company are required to source additional lands for landspreading and, in the interim, sufficient land is available to cater for organic wastes.

Noise

The plant is located close to the town of Charleville with residential housing close to a number of the plant boundaries. There have been no complaints received by the Agency concerning noise to date. As the main Charleville-Kilmallock road passes by the site, traffic noise is a significant contributor to noise in the area, particularly during daytime hours.

The Noise survey undertaken for the licence application indicated a number of tonal qualities to some of the noise emissions from the site. The proposed determination allows 18 months for the company to attain daytime 55 L_{eq} dBA and night-time 45 L_{eq} dBA at noise sensitive locations. This will facilitate the use of the results of the first survey in securing compliance with the limits.

The upgrading to the effluent treatment plant is not expected to impact on noise sensitive locations. This is because a number of noise mitigation measures have been incorporated in the design of the plant. The noise survey required in the PD will be used to verify the success of these measures.

Residuals Management & Environmental Liabilities

It is deemed necessary to condition an environmental liabilities risk assessment. This will ensure that any environmental liabilities arising out of accidental emissions from the site (and particularly the groundwater under the WWTP) will be catered for. It is not deemed necessary to include any conditions relating to Residuals Management.

Submissions

Six submissions were received by the Agency. Three of these were from the Dept. of the Marine and Natural Resources and these are dealt with under the one heading.

Submission from Dept. of Marine & Natural Resources

The first submission received commented that no alternative to the existing discharge to the River Charleville had been considered and that the option of piping the treated effluent to the Mague should be considered. They express their concern about the management of effluent when periods of low flow in the receiving waters coincides with peak production. They go on to state that there is currently pollution in the catchment but that the Charleville river could become a spawning/nursing river if pollution is controlled. As the Dept are a nominated body for receiving a copy of the EIS under SI 85 of 1994, the other two submissions received related to comments on the information requested by the Agency under Article 14 and information supplied by the developer. They make the point that there is a special need to maintain close control over the areas proposed for landspreading as it may be necessary to have more of a reserve than is currently the case.

Response

Condition 6.10 of the PD requires the applicant, in consultation with Cork County Council, to investigate the feasibility of piping the effluent to the River Mague. The PD also contains restrictions in the number of dilutions that must be available before discharge is permitted. This, coupled with a capacity for 150 days effluent storage, will ensure protection of the receiving waters. The PD requires (Condition 8.4.4) a detailed Nutrient Management Plan to be submitted for agreement within six months of the date of grant of licence. There will be no sludge generated for disposal at the WWTP until September/October 1999. This will facilitate the identification of additional lands to those already approved if necessary. The company also has, between limed sludge cake and liquid sludge facilities, 4 months capacity for sludge storage.

Submission No. 2

Limerick County Council, in their submission, state that the decline in the water quality in the Charleville stream, as detailed in EPA reports, has resulted in the virtual elimination of salmonid fish stocks from the river system. The eutrophication problems are thought to result from diffuse agricultural as well as point sources and the County Council state that the Golden Vale plant is responsible for approximately 50% of the phosphate input to the stream. They request that the licence limit for ortho-phosphate for this company be set at 1-2mg/l and that the company be required to achieve this within 1-2 years of licence issue

Response

New plant BATNEEC levels of 2mg/l for Total Phosphorous apply to the effluent from July 31, 2000. This will see an 80% reduction in Phosphorous emissions from the Golden Vale operations. Because of the low flow in the receiving waters and the already high phosphorous levels, the reduction will not result in an 80% improvement in water quality but it will be significant nevertheless.

Submission No. 3

Duchas, the Heritage Service, in their submission request that part of the spreadlands proposed by Golden Vale be excluded. This is because the site adjoins and is partly within Natural Heritage Area No. 92, Kilcolman Bog. They submit that the spreading of fertiliser in that area would have a negative impact of the habitat.

Response

Due to the vulnerability of the receptor, Schedule 3(v) prohibits the use of the landbank adjoining Kilcolman Bog for landspreading or organic waste. In addition to being addressed by the company in preparing the NMP for the site, the identification of additional lands for inclusion in the landbank is included as a mandatory Environmental Objective & Target and will be tracked as part of the EMP.

Submission No. 4

Cork County Council's submission relates to Landspreading of Organic Waste. They state that since Golden Vale have not previously produced sludge for use in agriculture soil injection should be the method of application specified. They also refer to a number of fields in the proposed landbank which are already signed up by other industries with Nutrient Management Plans.

Response

The Agency currently operate a system whereby three methods of landspreading are approved; soil injection, low trajectory splashplates and bandspreading. These are permitted in accordance with the Agency code of practice of landspreading. There appears to be no strong justification presented which would require the Agency to deviate from it's standard practice in this aspect and it is recommended to allow landspreading using the three Agency approved methods in the PD. Condition 8.4.3 of the PD prohibits the use of land already signed up for landspreading of other waste. The identification of additional lands for inclusion in the landbank is included as a mandatory Environmental Objective & Target.

Recommendations

That the Board approve the proposed determination as submitted.

Signed

James Moriarty