INSPECTORS REPORT
WASTE LICENCE REGISTER NUMBER 046-1

(1) Summary:

Name of Applicant	Tegral Building Products Limited.
Facility Name(s)	Ballylinan Landfill.
Facility Address	Ballylinan, County Laois.
Description of Principal Activity	Landfilling of non-asbestos fibre cement manufacturing waste and asbestos based construction materials.
Quantity of waste (tpa)	Maximum of 650tpa.
Environmental Impact Statement (EIS) Required	No.
Number of Submissions Received	One
INSPECTOR'S RECOMMENDATION	The proposed decision as submitted to the Board be approved.

Notices	**Issue Date(s)**	**Reminder(s)**	**Response Date(s)**
Article 14 (2) (b) (i)	Not Applicable		
Article 14 (2) (b) (ii)	21 July 1998 27 August 1998		17 August 1998 14 September 1998 9 October 1998 6 November 1998
Article 14 (2) (a)	10 November 1998		
Article 16	11 December 1998		29 January 1999 2 February 1999

Applicant Address	Tegral Building Products Limited, William Street, Athy, County Kildare.
Planning Permission Status and Date Granted (if appropriate)	Planning permission was issued on the 27th September 1988. The permission expired on the 26th September 1992.
Planning Authority	Laois County Council.
For Local Authority applicants, is the facility within its own functional area	Not Applicable.
Is the facility an existing facility	No, for the following reasons : 1. The application was received on the 1st May 1998 which is after the prescribed date. 2. The site does not have a current planning permission.
Prescribed date for application	Prior to 1st May 1998.
Date Application received	1st May 1998.
For Certified Sites, Have Matters in the EIS relating to environmental pollution been considered as required by Article 21 of SI 133 of 1997	Not Applicable.
Location of Certificate in Application	Not Applicable.
Confidential Information Submitted	No.
Location of Planning Documents in Application	Attachment B.4.1 and correspondence from Laois County Council dated the 21/12/98, 6/1/99 and 14/1/99.
Location of EIS in Application	Not Applicable (Waste intake less than 25,000 tpa.).

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
29th May 1998	Check site notice.	Brendan Wall Inspector, EPA	In compliance with Articles 5 and 7 of S.I. 133 of 1997 as amended.
10th September 1998	Site visit.	Brendan Wall	Visit site and surrounds.

		Inspector, EPA	

(2) Class/Classes of Activity

The class(es) of activities for which the applicant has applied are marked below. The principal activity is indicated by (P).

Waste Management Act, 1996					
THIRD SCHEDULE **Waste Disposal Activities**			**FOURTH SCHEDULE** **Waste Recovery Activities**		
1.	Deposit on, in or under land (including landfill).	P	1.	Solvent reclamation or regeneration.	
2.	Land treatment, including biodegradation of liquid or sludge discards in soils.		2.	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).	
3.	Deep injection of the soil, including injection of pumpable discards into wells, salt domes or naturally occurring repositories.		3.	Recycling or reclamation of metals and metal compounds.	
4.	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.	X	4.	Recycling or reclamation of other inorganic materials.	
5.	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.		5.	Regeneration of acids or bases.	
6.	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.		6.	Recovery of components used for pollution abatement.	
7.	Physico-chemical treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. Of this Schedule (including evaporation, drying and calcination).		7.	Recovery of components from catalysts.	
8.	Incineration on land or at sea.		8.	Oil re-refining or other re-uses of oil.	
9.	Permanent storage, including emplacement of containers in a mine.		9.	Use of any waste principally as a fuel or other means to generate energy.	
10.	Release of waste into a water body (including a seabed insertion).		10.	The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system,	
11.	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.		11.	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	
12.	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.		12.	Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.	
13.	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.		13.	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.	

Class Description:

Third Schedule**:**
Class 1: Deposit on, in or under land (including landfill)
This is the principal activity and refers to the deposit of waste arising from the manufacture of fibre-cement products at the Tegral Building Products Ltd plant in Athy, County Kildare. Asbestos based construction materials arising from the Tegral plant is also deposited at the facility.

Class 4:
The refers to the disposal of dewatered cement processing sediment into a prepared bay or trench prior to covering with an inert covering material.

Activities recommended for licensing:

It is recommend that all the above activities, for which the applicant has applied for a waste licence, be licensed subject to the conditions contained in the attached Proposed Decision.

(3) Facility Location

Appendix 1 contains a Site Location Map

The landfill is located in a disused limestone quarry in the townland of Ballylinan in County Laois. It is approximately 1km east of the village of Ballylinan. The facility is approximately 1.5 hectares in size. Several dwellings are located within a 500m radius of the site. A row of 13 dwellings are located to the north of the site. The closest house is approximately 140m from the boundary. The closest facility boundary to the houses is approximately 10m away. Two farms and dwellings are located to the south east of the site, one which is directly opposite the site entrance and approximately 90m from the site.

(4) Waste Types and Quantities

Total quantities and types of wastes accepted by the facility are shown below.

YEAR	NON-HAZARDOUS WASTE (tpa)	HAZARDOUS WASTE (tpa)	TOTAL ANNUAL QUANTITY OF WASTE (tpa)
1997	761	None	761
1998	max 2,500 (estimate)	None	2500 (max)
1999	max 650 (estimate)	None	650

The total quantities of waste deposited at the facility and the amount to be deposited prior to closure are shown below.

	NON-HAZARDOUS WASTE (tonnes)	HAZARDOUS WASTE (tonnes)	TOTALS (tonnes)
Already deposited	5,655 note 1	None	5,655
To be deposited	4,300 note 2	None	4,300

Note 1: Includes wastes arising from the asbestos cement manufacturing process and asbestos based construction products.

Note 2: A maximum of 890 tonnes of asbestos based construction materials is to be deposited at the facility, this includes asbestos-cement roofing material to be removed from the roof of the Tegral factory buildings. The remainder of the waste consists of non-asbestos cement waste and other waste resulting from manufacturing operations at the Tegral Building Products plant in Athy.

The expected life of the facility and the expected maximum annual tonnage are indicated below.

Expected Life of Facility (years)	10 (from the application date)
Maximum Annual Tonnage (tpa)	650 (estimate for 1999)

(5) Activity Summary

The Tegral landfill facility at Ballylinan has been in operation since 1990. The site has been operating under a permit from Laois County Council issued under the European Communities (Waste) Regulations 1979, European Communities (Toxic & Dangerous Waste) Regulations 1982 and the European Communities (Asbestos Waste) Regulations, 1990 & 1994. Only waste arising from the Tegral factory in Athy is deposited at the facility. Two other quarries close by the facility have been used in the past. The types of waste disposed at the facility in the past under permit included: *cement-asbestos waste or similar products produced from non-asbestos materials, sludge containing asbestos fibres and empty bags formally containing asbestos blocks which had been heat treated*. Asbestos-cement is a composite material consisting of approximately 10% white asbestos fibres (chrysotile) and 90% cement.

In August 1998 the company ceased production of asbestos-cement products and now manufactures fibrous cement alternatives. The waste currently being disposed can be classified mainly as inert and non-biodegradable wastes along with disposal of sedimentation waste resulting from the removal of suspended solids from the water treatment plant. No biodegradable waste is disposed at the facility. The company

propose using the facility to dispose of asbestos-cement roofing material which is be removed from the factory during repairs and replacement of factory buildings as necessary. The specific categories of waste which Tegral has applied for permission to deposit at the facility - as per the European Waste Catalogue - are as follows, both waste types are classified as non hazardous. :

- Wastes from [the manufacture of] other cement-based composite materials (10 13 03)
- Asbestos-based construction materials (17 01 05).

Potential emissions from the facility are dust and asbestos fibres. The potential for the release of asbestos fibres has significantly decreased since the company ceased manufacturing asbestos-cement products and using the facility for the disposal of waste from this manufacturing process. Asbestos fibre monitoring has been carried out at the facility by Enterprise Ireland [Forbairt] since 1990. A summary of the monitoring results are given in Section 10 of this report. The applicant has proposed that this monitoring be continued.

The groundwater vulnerability for the facility is described by the GSI classification as a locally important fissured aquifer where groundwater is extremely vulnerable to pollution. Groundwater monitoring carried out by the applicants has shown elevated levels of some parameters both upgradient and downgradient which is generally attributed to external sources.

The deposition of waste at the facility is covered by procedures put in place by the company and outlined in the application. Since the facility accepted large quantities of asbestos containing wastes restoration and proper covering of the previously deposited waste, is an important consideration. The inert waste being deposited - along with the final capping of soil proposed - will serve as an effective cover and allow the quarry to be filled to the same level as the surrounding land.

(6) Facility Operation/Management

- **Waste Acceptance Procedures**

The applicant has written procedures covering Waste Acceptance, [Attachment E.2 - revision 1], Operating Procedures [Attachment E.3.2 - revision 1] and Site Safety [Attachment E.3.3]. Tegral have their own internal company regulations governing the transport and disposal of factory waste at Ballylinan landfill site [Attachment E.3.4 - revision 1]. *Condition 5.2* of the proposed licence restricts the waste to be deposited to inert waste, non-biodegradable waste and asbestos based construction materials.

- **Waste Handling**

All disposal is undertaken and supervised by Tegral staff. All the “hard wastes” are dampened to minimise dust generation and transported to the facility in a covered vehicle owned by Tegral. At the facility the hard waste is tipped against the working face prior to covering. Every three to four months sedimentation waste is also

deposited at the facility into prepared bays or trenches. Procedures are in place to cover emergency situations [Attachment E.3], these were developed for the disposal of asbestos cement waste at the facility. The applicant states that staff have been trained in the procedures used and the requirements of the existing permit.

- **Nuisance Control**

Because of the inert and non-biodegradable nature of the wastes deposited at the facility nuisances from birds, fire, litter, odour and vermin are not anticipated. Any litter found is disposed of off site. Traffic movements into the facility are limited to an average of two vehicle loads per week. The proposed licence contains conditions to guard against potential nuisances. A potential nuisance from the facility is the creation of dust as a result of the disposal of dusty cement waste, movement of vehicles on site or the application of covering material during dry weather. All wastes are dampened prior to transport, waste is deposited according to set procedures and water is available at the facility for dust abatement. The proposed licence requires that the procedures the company has in place are followed (*Condition 5.3*).

- **Hours for Waste acceptance**

Operating hours are between the hours of 9.00 am to 17.30 Monday to Friday only.

(7) Facility Design

- **Infrastructure**

Infrastructure at the facility is limited. The public are not allowed access to the facility which is secured by two lockable metal gates. A 2m high chain link fence topped with barbed wire surrounds the entire facility. The facility is partially screened from the houses to the north by a row of trees. The facility is unmanned except during disposal of the wastes. Access to the facility from the public road is via an access road. There are no hardstanding areas at the facility. There is no weigh-bridge at the facility and the installation of a weigh-bridge is not a licence requirement. The reason for this is the relatively small waste quantities involved. Details on the wastes deposited can be kept by the company since all waste arises from their premises. There is no wheelwash at the facility. No fuel is stored at the facility.

- **Liner Details**

The facility is located in an unlined disused limestone quarry. The applicant states that all of the original floor of the quarry had a layer of clay placed on it prior to landfilling.

- **Capping System**

All waste is covered immediately by 250mm of material followed by at least 500mm of material by the end of the day's operation. The cover material used is gravel and quarry screening which is purchased specifically for this purpose. The proposed decision make such covering a licence condition (*Condition 5.10 and 5.11*). Approximately 17,500 tonnes of covering has been imported into the facility for 5,569 tonnes of waste which has been deposited. *Condition 5.13* specifies that the applicant

must insure that all previously deposited asbestos containing waste is covered by a temporary cap of at least 500mm of cover material. Samples must also be taken and analysed as a reassurance that the capping material is not contaminated by asbestos fibres (*Condition 5.13*).

(8) Restoration and Aftercare

The proposed waste licence specifies that the applicant must as a minimum keep to the restoration and aftercare management plan submitted as attachments G.1 and G.2 of the application. *Condition 8.2* requires the applicant to submit updated proposals to the Agency for approval before starting the restoration scheme. The restoration scheme proposed is to restore the facility to productive agricultural land which blends in with the surrounding contours. Restoration of the facility is an important consideration in this case. The facility will remain fenced off. The final capping proposed is 500mm of gravel and quarry screening covered by 1500mm of topsoil. *Condition 8.4* specifies that no asbestos waste shall be present within 2.5m of the final surface levels.

(9) Hydrogeology

The facility is located in a disused limestone quarry. The groundwater resource is described as a locally important fissured aquifer where the groundwater is extremely vulnerable to pollution. The water table lies between 6.5 - 14 m below the surface. There are no domestic groundwater supplies in use in the area except for one supply to the south east of the facility (Borehole MW-07). The hydrogeological assessment indicates a slight hydraulic gradient towards the south east across the landfill but also comments that migration could be influenced by structural dolomitic / karstic geology.

Given the extreme vunerabily of the groundwater the proposed licence specifies that only inert waste, non-biodegradable waste and asbestos based construction materials can be deposited at the site (*Condition 5.2*). The types of materials to be deposited e.g. tiles and slates, are in everyday use in the construction industry. To check the inert nature of the waste - and in particular the sedimentation waste - being deposited a leachability test must be carried out on a representative waste sample within six months (*Condition 5.6*). Groundwater monitoring is required for a limited range of parameters. Monitoring for all the paramenters measured previously at elevated levels must be carried out at the frequencies given in Schedule F.

Groundwater monitoring was initially carried out in April 1998 from five boreholes installed around the perimeter - two upgradient / background (MW-02 and MW-05) and three downgradient (MW-01, MW-03 and MW-04). Elevated pH, ammonia, phenol, potassium, barium, iron and manganese was recorded in some upgradient and downgradient boreholes. Additional monitoring was carried out in January 1999. Several parameters were measured at concentrations above those permitted in the Drinking Water Regulations in both upgradient (ammonia, pH, iron, phenol,

manganese, nitrite, potassium) and downgradient boreholes (ammonia, phenol, manganese, nitrite, nitrate, calcium, potassium).

Concentrations of ammonia in boreholes MW-2 and MW-5 ranged from 10.5 - 15.9mg/l whereas levels in downgradient boreholes were lower with levels of <0.1 - 6.2mg/l measured. An observable decrease in ammonia concentrations downgradient with a corresponding increase in nitrate was noted. The downgradient domestic supply well (MW-07), which was monitored on this occasion, revealed levels of nitrate (13.0 - 13.8mg/l), phenol (0.02mg/l), potassium (12.7mg/l) and calcium (203.9 - 204.2mg/l) at concentrations above the MAC for drinking water of 11mg/l, 0.0005mg/l, 12mg/l and 200mg/l respectively. Phenol was below the limit of detection in the most recent set of analysis results available from this well. Significantly elevated phenol levels were recorded in the upgradient / background boreholes MW-02 and MW-05 (0.07 - 0.22mg/l). The upgradient well (MW-06) above the row of house to the north had elevated nitrate levels (8.8 to 9.1 mg/l), and ammonia and phenol below 0.1 and 0.01mg/l respectively.

In the case of the nitrogenous contamination, given the inert nature of the waste, and the type of contamination found, the contamination is likely to be due to other activities. The elevated ammonia, nitrate, nitrite and potassium indicate possible contamination by organic waste. Copies of the results were forwarded to Laois County Council as the responsible authority in this instance. The elevated pH recorded in MW-02 and MW-01 on occasions may be attributable to the cement wastes but any increase is limited to the immediate vicinity of the site and is not noticeable further downgradient. The source of the very high concentration of phenol in upgradient / background boreholes MW-02 and MW-05 is not known. Sources of phenol include tarmacadam, wood preservatives and disinfectants The possibility that previously deposited waste may be contributing to the contamination found can not be discounted. Laois County Council (pers.comm) are not aware of any wastes being deposited at the site which could have contributed to the contamination found. Further investigations are required to determine the source of the contamination. This is a requirement of *Condition 9.10*. The proposed decision only permits inert waste to be deposited at the facility and therefore there should be no increase in contamination or environmental pollution attributable to the future deposition of waste.

(10) Emissions to Air

The World Health Organisation in their publication *Air Quality Guidelines for Europe 1987* state that in the case of asbestos-cement *the release of fibres to the general environment is minimised, since the fibres are essentially "locked" in the cement matrix*. Asbestos is a proven human carcinogen (IRAC Group 1). The WHO report that *no safe level can be proposed for asbestos because a threshold is not known to exist. Exposure should therefore be kept as low as possible*. While asbestos-cement may poses a lesser risk nevertheless care must still be taken during disposal to prevent the release of asbestos fibres. The *Council Directive on the Prevention and Reduction*

of Environmental Pollution by Asbestos (87/217/EEC), which must be considered as part of the waste licensing process (S.I. No. 133 of 1997, Article 37), requires members states to take the measures necessary to ensure that *where waste containing asbestos fibres or dust is landfilled at sites licensed for the purpose, such waste is so treated, packaged or covered with account being taken of local conditions, that the release of asbestos particles into the environment is prevented.*

Asbestos fibre monitoring has been carried out at the facility since 1990 by both the applicant and Enterprise Ireland. The permit issued by Laois County Council required monitoring to be carried out three times per year, at four monthly intervals. A summary of the monitoring carried out is presented in the Non Technical Summary - (revision 4) and copied below.

	Total No. of Samples	No. of Values <0.01 fibre /ml	Percentage <0.01 fibre /ml	No. of Values >0.01 fibre /ml	Percentage >0.01 fibre/ml
Enterprise Ireland Note 1	84	83	99%	1	1%
Tegral	162	155	96%	7	4%
Total	*246*	*238*	*97%*	*8*	*3%*

Note 1 : Enterprise Ireland in their asbestos results sheets report that the value of <0.01 f/ml is the threshold below which an enclosure can be deemed fit for return to normal use and occupancy. It is also close to the limit of detection of the analytical technique and thus levels below this are not reported. The filters are tested in accordance with the U.K. Heath and Safety Executive procedure MDHS 39/4 (1995).

The highest value detected at the Ballylinan site was 0.076 fibres/ml for a sample taken adjacent to the tipping area in October 1996. The applicant states that this value was caused by the deposition of a dry waste load which was not thoroughly wetted prior to leaving the factory. The results provided show that samples taken from that date have values of 0.01fibres/ml or less. Three sets of monitoring results have been submitted for 1998, all results were below 0.01 fibres per ml. Actual fibres counted ranged from 0 to 2 fibres for 480 to 492 litres of air sampled [0 to 0.000004 f/ml]. Note that with the ceasing of asbestos cement production future disposal operations at the facility are significantly different from those in the past.

For comparison of the results the World Health Organisation in their publication from 1987 report that in rural areas remote from emissions sources the pattern of concentration of fibres is below 0.0001fibre /ml and in urban areas the levels may vary from below 0.0001 fibre /ml to 0.001 fibre /ml. Irish health and safety legislation sets a limit value for white asbestos (chrysotile) at 0.6 fibres/ml measured over an 8 hour period.

As mentioned previously the applicant is proposing to use the facility to dispose of asbestos cement roofing material from the Tegral factory building. A requirement of the proposed decision is that in future all waste asbestos based construction materials

accepted at the facility must be double wrapped in heavy gauge plastic and labelled (*Condition 6.4*). *Condition 5.10* requires that on arrival at the facility such waste must be covered by at least 500mm of temporary cover in specially prepared bays or trenches

The applicants have proposed to continue the asbestos fibre monitoring programme. A potential hazard at the facility is the disturbance of already deposited waste and therefore the continuation of the monitoring programme is a sensible precaution. This monitoring will act as reassurance that (1) the current activities at the facility are not disturbing asbestos waste already deposited and (2) the disposal of asbestos-cement roofing sheets at the facility is carried out without causing environmental pollution. *Condition 5.12* specifies that once covered waste shall not be disturbed. The continuation of the asbestos monitoring programme is a condition of the proposed licence [*Condition 9.1 and Schedule F.1*].

In addition to asbestos fibre monitoring the applicant has carried out dust monitoring over a two month period from two monitoring points [September & October 1998]. The dust deposition rates at the facility varied from 0.9mg/m^3/day to 19.1mg/m^3/day. The results of this monitoring indicate that the level of general dust emissions from the facility are unlikely to cause a problem. A water tanker, pump and a hose and sprinkler head is available at the facility for dust abatement. During dry weather spraying of waste with water is a requirement of the proposed licence (*Condition 6.5*).

Landfill gas monitoring was carried out in September 1998. No gas was detected in any of the five groundwater boreholes monitored indicating the non-biodegradable nature of the waste deposited.

(11) Noise Emissions

There are two noise sources at the facility - (1) the excavator and (2) vehicles carrying the waste. Noise monitoring was carried out at 5 locations around the perimeter. The noise levels recorded varied from 56 to 64.1dB(A). Readings taken when the facility was not in operation varied from 45.4 to 56.2 dB(A). While the noise levels measured at the boundary exceed the recommended daytime limit of 55db(A) limit - probably due to the proximity of the boundary to the noise sources - the predicted level at the nearest residential boundary is acceptable and varies from 34.2 to 36dB(A). Noise is not anticipated to be a problem due to the limited and intermittent activity at the facility. *Conditions 7.3 and 7.4* guard against impairment or interference by noise outside the facility boundary. Noise monitoring is not a requirement of this licence.

(12) Emissions to Sewer

There are no emissions to sewer from this facility.

(13) Emissions to Surface Waters

There are no emissions to surface water since the existing quarry is below the surrounding ground level.

(14) Other Significant Environmental Impacts of the Development

None

(15) Waste Management, Air Quality and Water Quality Plans

No relevant waste management or air quality plans exist.

(16) Submissions/Complaints

One submission has been received from Dúchas The Heritage Service who identify a site, which is a recorded national monument, to the north of the facility ; outside of the facility boundary. Dúchas note that if any groundwork is proposed outside the northern boundary then they need to be consulted. The enclosure was identified in the application. The submission is addressed by the fact that the all activities are restricted to the land outlined in red in drawing No 8. (*Condition 1.2*). The site is outside the land marked in red.

Signed _____ Dated:

Brendan Wall
Inspector
Environmental Management & Planning

APPENDIX 1

SITE LOCATION MAP