INSPECTORS REPORT
WASTE LICENCE REGISTER NUMBER W004

(1) Summary:

Name of Applicant	South Dublin County Council
Facility Name (s)	Arthurstown Landfill Site
Facility Address	Arthurstown, Kill, Co. Kildare
Description of Principal Activity	Specially engineered landfill
Quantity of waste (tpa)	360,000 maximum (currently taking 180,000 due to a lack of baling capacity)
Environmental Impact Statement Required	No
Number of Submissions Received	5
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)	17th June 1997	14th August 1997	21st August 1997
Article 14 (2) (a)	4th September 1997		
Article 16	19th September '97 27th January '98 17th April '98 15th June '98	None Sent	20th October '97 31st March '98 1st May '98 14th July '98

Applicant Address	SAO Secretariat Dept., South Dublin County Council, PO Box 4122, Town Centre, Tallaght, Dublin 24
Planning Permission status and date granted (if appropriate)	Permission granted 29th July 1994
Planning Authority	Kildare County Council
For Local Authority applicants, is the facility within its own functional area	No
Is the facility an existing facility:	Yes
Prescribed date for application:	Prior to 1st May 1997
Date Application received:	30th April 1997
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	Yes, but deemed not confidential and subsequently obtained via Article 16.
Location of Planning Documents in Application	Attachment B.4, Volume 1 of the Application
Location of EIS in Application	Not Applicable

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
9/4/97	Pre-application meeting	T Nealon	Site under construction
15/5/98	Check notice	T Nealon	Site Notice complies with Art. 8
31/10/97	Progress inspection	T Nealon	Construction of Stage 1 complete

(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), other activities by (X).

Waste Management Act, 1996			
THIRD SCHEDULE **Waste Disposal Activities**		**FOURTH SCHEDULE** **Waste Recovery Activities**	
1. Deposit on, in or under land (including landfill).	X	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.	P	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.	X	6. Recovery of components used for pollution abatement.	
7. Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) 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.	X	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 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:

Classes 1 and 5 of the Third Schedule refer to the operation of the landfill site.
Classes 4, 6 and 7 of the Third Schedule refer to the treatment of leachate on site

Activities recommended for licensing:

It is recommended that all the above activities, for which the applicant has applied for a waste licence, be licensed subject to the requirements of *Condition 1.1 of the proposed licence.*

(3) Facility Location

Appendix 1 contains a location drawing and a layout drawing showing the significant features of the facility.

The facility, comprising some 64 hectares, is situated in a rural location some 1.6 kilometres to the south-east of Kill village which has a population of some 1,500. The nearest residential property is located to the north of the facility. Also adjacent to the facility and located on the southern side is a timber treatment yard operated by Balcas. Extraction of sand and gravel is also ongoing adjacent to the facility to the north-east. The facility is bounded to the north-east by an old hazardous waste landfill which has been surrounded by a bentonite slurry cut-off wall prior to the construction of the new landfill facility. Groundwater wells have been installed in the old landfill and the groundwater is being pumped to ensure that there is no build-up of groundwater with resultant pressure on the slurry wall. The old landfill is outside the area of the facility subject to this application. However, the pumped groundwater is being collected by the surface/groundwater control system of this facility. Residual sands and gravels are removed from the facility to expose the clay which is used to construct the liner. This leads to dewatering of those sands and gravels which have not yet been removed. This groundwater is collected, stored in the surface water collection lagoon with the surface water run-off and the groundwater from the old hazardous landfill and discharged to the Hartwell River. The dominant landuse in the area is grazing pasture with a number of stud farms in the immediate vicinity.

(4) Waste Types and Quantities

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

YEAR	NON-HAZARDOUS WASTE (tpa)	HAZARDOUS WASTE (tpa)	TOTAL QUANTITY OF WASTE (tpa)
1997	Start-up year, full records not kept	Not Applicable	Not Applicable
1998	180,000	Not Applicable	180,000, (projected)
1999	180,000	Not Applicable	180,000, (projected)

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

	NON-HAZARDOUS WASTE	HAZARDOUS WASTE	TOTAL QUANTITY OF WASTE
Already deposited	180,000 tpa estimated	Not Applicable	180,000 tpa estimated
To be deposited	3.6 million tonnes	Not Applicable	3.6 million tonnes

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

Expected life of the facility, (in years)	10 (restricted by the planning permission)
Maximum Annual Tonnage	360,000

(5) Facility Design

- **Development;**

Arthurstown accepts only baled waste. Only Municipal Waste baled at Ballymount Baling Station and other approved baling stations will be disposed of at the facility. Prior to development the site was a partially worked-out sand and gravel quarry. It is intended to develop the landfill in five phases. The development of Stage 1 which comprises Phases 1 and 2 was completed in 1997. The facility will be restored and planted to achieve a contour level similar to the original pre-quarrying landscape.

- **Infrastructure;**

The boundary of the facility is delineated by a 2.1m security fence which links into the gated entrance. Within the landfill there is a network of haul roads and access roads to the cells and to perimeter monitoring stations. The main infrastructure within the facility includes a car park area, offices, weighbridge, wheelwash, leachate storage lagoon, fuel storage tanks, and a marshalling yard for the baled waste containers to be stored and transferred to the site vehicles. There is also a groundwater/surface water retention pond which is used as a settlement pond for the collected surface water, for groundwater obtained by dewatering the sands and and for groundwater obtained by the constant dewatering of the old hazardous waste landfill. The provision and maintainence of this infrastructure is required by *Condition 4 Site Infrastructure*.

- **Liner System;**

The lining system for Stage 1 consists of 1metre of Black Boulder Clay re-compacted to achieve permeabilities of less than $1x10^{-9}$ m/s, overlain by a 2.5mm thick High Density Polyethylene (HDPE) flexible membrane liner (FML) and a drainage layer incorporating leachate collection pipework. QA/QC procedures were in place for the construction of the liner for Stage 1. The lining of future cells of the facility requires the prior written agreement of the Agency under *Condition 4.14 Specified Engineering Works.*

- **Leachate Management;**

Leachate generated in each cell drains by gravity through a network of collection pipes to the lowest corner of the cell and then is piped to a collection manhole and subsequently pumped, via a rising main, to a leachate storage lagoon. The leachate will then be tankered by the applicant for disposal to the public sewer at a manhole at Watery Lane, Clondalkin, Dublin 22 for treatment in Ringsend Sewage Treatment Works. The applicant has constructed a leachate treatment plant and is assessing the potential for aerobic treatment of leachate arising on the facility.

- **Landfill Gas Management;**

It is intended to progressively install passive gas vents on a 50 metre grid spacing to vent landfill gas being produced by the waste. *Conditions 4.16.2 and 4.16.3* require the applicant to assess and make proposals for the flaring and utilisation of landfill gas within time periods of six and twelve months respectively.

- **Capping System;**

The proposed final capping system consists of a 0.5 metre layer of granular material overlain by Low Density Polyethylene (LDPE) sheeting overlain by 1 metre of free-draining soil.

(6) Facility Operation/Management

- **Waste Acceptance Procedures**

*Conditions 5.1 and 5.3 s*tipulate that only baled Municipal Waste from Ballymount Baling station or other approved baling facilities will be accepted at the facility. The facility is also restricted to the acceptance of baled waste by the planning permission.

- **Waste Handling**

The baled waste will be brought to the facility in containers which will be set down in the marshalling yard. Slave vehicles will then pick up the containers and transport them to the working face. The bales will then be mechanically deposited in a stacked formation in the cell.

- **Nuisance Control**

The landfill will only accept baled waste which minimises the potential for wind-blown litter. Scavenging birds are kept from the site by the use of daily cover and the extensive use of falcons. The use of daily cover, as required by *Condition 5.14,* also minimises potential odour nuisance and any nuisance caused by vermin and insects. The latter will also be controlled by appropriate baiting. Odours from the leachate storage lagoon will be minimised by aeration while landfill gas odours will be controlled by flaring. Traffic using the site will use the wheel shaker and wheel-wash to prevent the tracking of any materials onto the public road. Potential nuisances are controlled by *Condition 6 Environmental Nuisances*. Scavenging is not allowed at the facility and is prohibited by *Condition 5.8*. The licensee is required to provide access to environmental information, including all monitoring results, concerning the facility, to members of the public at all reasonable times by *Condition 2.8*.

- **Hours of Operation**

Monday to Saturday 08.30 to 18.00 as set by the planning permission.

(7) Restoration and Aftercare

It is proposed to restore the facility to grassland. The final profile of the facility, its restoration and aftercare are controlled by *Condition 8 Restoration and Aftercare.*

(8) Emissions to Air

Emissions to air include landfill gas and dust. In addition there is potential in the future for emissions of the combustion products of landfill gas and of aerosols from the aeration of leachate. Dust monitoring requirements are established under *Condition 9.1*. Landfill gas monitoring requirements have been established in *Conditions 9.1, 9.4, 9.5 and 9.6. Condition 7.1* sets emission limits for landfill gas detected in buildings. *Condition 7.7* sets trigger levels for landfill gas detected on or in the immediate vicinity of the facility. *Condition 10.6* requires further action, including investigations and remedial action to be taken if trigger levels or emission limits are exceeded.

Where emissions of dust are generated, particularly during dry windy conditions, *Condition 6.4* requires the use of a water tanker to dampen the access and internal haul roads. *Condition 7.1* sets an emission limit for dust at the facility boundary.

(9) Emissions to Groundwater

The bedrock of the area is comprised of Silurian greywackes and shales. Overlying the bedrock are boulder clays, known as Brown Boulder Clay and Black Boulder Clay. The Brown Boulder Clay is the lower unit and consists of silts, sands and gravels. The Black Boulder Clay comprises a stiff, silty clay with occasional sand and gravel lenses. It varies in thickness across the site reaching a maximum of some 15m in the northwest and thinning to the south-east. The overlying sands and gravels have largely been removed during quarrying operations

The hydrogeology of the area consists of two aquifers, the upper weathered zone of the bedrock and the sands and gravels. In the western part of the site the two aquifers are separated by the Black Boulder Clay. To the east and south-east of the site it is likely that the aquifers are hydraulically connected due to the thinning and absence of the Black Boulder Clay. There are a number of private water abstractors within the area and the aquifers could be classified as minor aquifers of local importance.

Groundwater is monitored by a network of boreholes within and in the vicinity of the facility. Regular monitoring of these boreholes, as required by *Conditions 9.1 and 9.11* should ensure early detection of any leachate emissions. The lining system used on the site, the use of QA/QC procedures, and the use of gravity to drain leachate from the cells should ensure that leachate is controlled. Piping of the leachate to the

collection tank in rising mains and the lining of the collection tank should further ensure the prevention of leachate emissions. Direct discharges to groundwater are prohibited by *Condition 7.4*. Indirect discharges are controlled by *Condition 7.5*. *Condition 4.17.2* requires that leachate levels within the filled waste shall not exceed a level of 1.0 metre over the liner. *Condition 9.13* requires the licensee to establish a programme for monitoring the head of leachate present in the cells.

(10) Noise Emissions

The operation of plant and machinery is the main source of noise associated with the facility. Background noise levels at the perimeter of the facility have been assessed. The nearest properties are the residential property to the north-west and the Balcas timber processing factory to the south. Noise emission limits are established by *Condition 7.1*. *Condition 7.6* requires that there shall be no clearly audible tonal component in noise emissions from the facility.

(11) Emissions to Sewer

There are no direct emissions to sewer. In the short term it is proposed to tanker leachate produced on the facility to a manhole at Watery Lane, Clondalkin in South Dublin for discharge to sewer and treatment at Ringsend Treatment Works.

(12) Emissions to Surface Water

Surface water from the facility and groundwater from dewatering the sands and gravels and from the remediated old hazardous waste landfill are collected in a lagoon and discharged to the Hartwell River. An emission limit for the quantity of the discharge is established in *Condition 7.1*. *Condition 9.1* requires the weekly monitoring of the discharge and ongoing monitoring upstream and downstream of the discharge point.

(13) Other Significant Environmental Impacts of the Development

None.

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

No relevant waste management or air quality plans exist. A waste strategy has been produced for the Dublin region and a waste plan is currently being drafted. The requirements of the Water Quality Management Plan for the Liffey Catchment have been considered in the evaluation of this licence application.

(15) Submissions/Complaints

Appendix 2 contains a list of all submissions, and copies of same, received relating to the application. The dates received and the details of the individual, department, group or organisation making the submission are provided.

An overview of all submissions received in relation to the waste licence application is provided. This includes a summary of all issues raised in the submissions and clearly shows how these issues are dealt with in the proposed decision.

Wilkinson and Price, Solicitors, acting on behalf of the Kill Residents Group, made three submissions.

<u>*Submission.*</u>
The first, dated 22 May 1997, referred to the requirement of the planning permission that the sands and gravels be removed from underneath the waste and the facility constructed on the Black Boulder Clay. They are concerned that the removal of the sand and gravel would impact on private wells in the vicinity of the facility. Included in the submission was a list of additional information requested by Kildare County Council as part of the original planning application on 18.9.92.

The second, dated 3 June 1997, stated that they had been advised that at least one of the wells in the immediate vicinity of the facility had dried up.

The third, dated 22 September 1997, stated that the EIS submitted with the application failed to comply with Article 24 of the EIA Regulations, S.I. No. 349/89, repeated the statements contained within their submission of 22 May 1997 concerning the impacts on groundwater and expressed their concern that South Dublin County Council will greatly increase the annual input into the site. They also expressed concern that South Dublin County Council would transfer the licence or sub-contract the management of the facility. Attached to the submission were An Bord Pleanala's Inspectors report on the oral hearing and the report from his technical advisor.

<u>Response.</u>
Concerns about the potential impacts of the excavation of the sands and gravels on local wells are addressed by *Condition 9.12* which requires the monitoring of quantity

and quality parameters in all private wells within 500m of the facility, and *Condition 4.15* which requires, in the event that an adverse impact is demonstrated, that the licensee provide an alternative supply. *Condition 2.8* requires the establishment of a programme to ensure that members of the public can obtain information regarding the environmental performance of the facility. *Condition 9.23* requires that a copy of all monitoring results and interpretations shall be available at the facility for examination by any interested party. The annual input of waste to the facility is controlled by *Condition 5.6* which sets a limit of 360,000 tpa unless otherwise agreed in writing in advance with the Agency. The transfer of a licence is controlled by Section 47 of the Waste Management Act 1996 and may only occur with the agreement of the Agency. The management of the facility is controlled by *Condition 2.7*. The additional information attached to the submissions was considered.

Submission.
Mr Sweetman of the Waste Action Group also expressed concern about the removal of the sands and gravels. He also expressed concern as to the validity of the Environmental Impact Statement (EIS).

Response.
The concerns about the groundwater are covered by the condition discussed above. The EIS was considered as part of the planning process.

Submission.
The Eastern Health Board made a submission on 3 October 1997. Their submission dealt with the disturbance to the groundwater, their concerns that dust and noise monitoring arrangements were insufficient, concerns about the eventual disposal of leachate to the Hartwell River and about the period of post-closure monitoring being too short.

Response.
Their concerns about the groundwater are covered by the conditions discussed above. Dust and noise monitoring programmes are established by *Condition 9.1*. *Condition 9.16* allows the Agency to require the licensee to increase the scope and frequency of monitoring if necessary. There are no proposals to discharge leachate to the Hartwell River. Post-closure monitoring will continue until there is no further risk of any environmental pollution arising from the facility.

There have been no complaints with respect to the facility.

Signed _____ Dated:

Name Dr T Nealon

APPENDIX 1
LOCATION PLAN

APPENDIX 2

SUBMISSIONS