

INSPECTOR'S REPORT

WASTE LICENCE REGISTER NUMBER 127-1

Fingal County Council, County Hall, Main street, Swords, Co. Dublin.

Recommendation: That a licence be granted subject to conditions.

(1) Introduction:

Since the mid 1970's Fingal County Council (FCC) have operated a landfill at Dunsink, Dunsink Lane, Finglas, County Dublin. Subsequently a civic amenity facility was developed at the site. The site (62ha) is immediately east of the M50 between the N3 and N2 interchanges and was a former quarry. The landfilling of waste in Dunsink LF was of municipal type waste and it is estimated that 7,200,000 tonnes of such waste has been deposited.

Sensitive receptors and their respective distances from the landfill boundary include: a temporary halting site 20m south/south east, Dunsink Observatory 40m south, permanent housing 85m north east, Cappagh National orthopaedic hospital 130m north, a permanent halting site 200m east, Patrician College 200m north east and Elm green golf course 200m south east.

As part of the waste licence application FCC sought to start a final capping & restoration programme on site, establish a green waste composting facility, continue accepting white goods for recycling and maintain its bring centre (FCC hold a Certificate of Registration for a civic amenity facility/ bring centre for recyclable household materials).

The application was incomplete and of a poor standard. I consider that the final capping and restoration works is the main focus of this waste licence application. The applicant has estimated that approximately 556,000 tonnes of soil is needed to complete the restoration. However it must be noted that a restoration and aftercare plan was not included in the application or in response to an Article 14 request. Incomplete information was also submitted by the applicant regarding necessary improvements to the existing leachate infrastructure and proposed improvements to surface water infrastructure on site. The recommended PD requires the applicant to address these issues immediately and to furnish reports to the Agency within three/six months of grant of this licence.

A bring centre is already in operation on site. This accepts newspaper, paper, magazines, glass, aluminium and tin cans, light and heavy cardboard, textiles, plastic bottles, car & household batteries, waste oils and white goods. Uncontrolled white goods storage and green waste storage was observed during a site inspection conducted on the 30.05.03.

The activities applied for include Classes 4 of the Third Schedule and Classes 2, 3, 4 (principal activity), 9, 11 and 13 of the Fourth Schedule (WMA 1996).

Table 1.

Quantity of waste (tpa)	185,257 Tonnes of subsoil & topsoil for capping for 3 years Bring centre recyclables (500-3,500 Tonnes by year 3)
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	<p>White goods (1,000-3,000 Tonnes by year 3)</p> <p>Green waste for composting:</p> <ul style="list-style-type: none"> • Maximum 3,000 tpa open windrow; • Maximum 7,500 tpa in vessel/ enclosed
Number of Submissions Received	4

Table 2: Most Recent Site Visit

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
30.05.03	Site Inspection	Mary O'Hara & Eamonn Merriman	Bring Centre in operation. Landfill not in operation. Fly tipped waste at facility entrance being transferred to Balleally Landfill. Stockpiling of white goods is still evident.

(2) Facility Development

Prior to waste deposition a clay layer of at least 1 metre depth was reportedly spread over the base of the area (no records are available) and compacted to provide a low permeability base to the landfill. Pipes and drains were laid prior to deposition of waste to provide a leachate collection system which is connected to the leachate lagoon and drained by gravity off site to the main public sewer located on the Ratoath Road (East of the site), this system is still in place today. This public sewer drains to the WWTP at Ringsend, Dublin 4. Information provided indicates leachate discharge rates of between 24m³/hr (DW) and 65 m³/hr (max.). A proposal to introduce improved drainage off site was submitted but is considered unsatisfactory. Condition 3.13 of the Recommended Proposed Decision (PD) requires a report detailing the effectiveness of the leachate collection system and any improvements necessary to be submitted for agreement prior to implementation.

Between 1995-6 Irish Power Services Ltd (IPS) installed landfill gas extraction infrastructure on site. There is approximately 450 gas wells installed, and it is estimated that IPS currently draws on 200-230 of these wells. The infrastructure also consists of 4 engines and an open flare, which is used for emergency purposes. Condensate associated with the Landfill gas (50 l/day) is currently removed to a dewatering tank and diverted into the landfill via a gravel trench. Condition 3.14.3.2 of the Recommended PD requires condensate to be diverted to the leachate collection system.

The applicant applied to temporarily undertake green waste composting at the facility, with quantities to be accepted ranging from 10,000tpa – 30,000tpa (by year three). They intend to move to a proposed recycling facility at Kilshane Cross, County Dublin. The green waste will include tree prunings, leaf material and garden waste. It is anticipated that this waste will be shredded, placed in windrows for a 12-week period, turned at

intervals and screened. It is proposed to be located on a one-hectare area currently occupied by the site offices and yards. Insufficient data was provided to demonstrate that such large quantities of compost would be managed without causing environmental pollution. Therefore I recommend that only 3,000T of green waste can be processed at any one time under defined conditions of temperature, turning and residence time. The quantity allowed is based on UK Environmental Agency Technical Guidance on composting operations (Draft October 2001) (See Appendix 1 and Section 3 of this report). The applicant will also have the option to accept up to 7,500tpa of green waste for enclosed/ in vessel composting, with the prior agreement of the Agency.

The applicant did not state hours for waste acceptance and in these circumstances I recommend that the hours of operation will be from 08.00 – 19.00 Monday to Saturday and the hours of waste acceptance from 8:00 to 18:00 (see Condition 1.5). This is also referred to further in Section 4 ‘Emissions to Air’ – Noise (see below).

(3) Waste Types and Quantities

The principal activity will be Class 4 of the 4th Schedule (WMA 1996). The maximum annual tonnage of waste to be accepted is outlined above in Table 1. FCC estimates that a further 556,000 tonnes of topsoil and subsoil is needed to fully restore the site (over a three year period). This estimation was based on a trial pit survey of the site (74 trial pits) for which test records were not submitted to the Agency. Condition 4.2.1 of recommended PD specifies the type of capping necessary for non-hazardous landfills.

The PD requires that procedures for acceptance and handling of waste to be in place within six months of grant of the licence (see Condition 5.1). Due to the lack of/limited information received regarding the handling of such tonnages, necessary infrastructure, noise emissions and assessment of odours I do not recommend that such tonnages should be permitted (see Section 2 above). Condition 1.4 of the PD therefore restricts the maximum quantity of composting by open-air windrow method to less than 3,000 tpa and the maximum allowed for enclosed in-vessel composting is 7,500tpa. It is important to note that the applicant has indicated that ‘the composting facility is an interim measure until the proposed Fingal County Council facility at Kilshane Cross is operational’.

In recommending the restrictions on the tonnages to be accepted for composting at this facility, I consider that open windrow composting of green waste at the facility in the quantities applied for (10,000-30,000 tpa by year 3) would not comply with the requirements of Section 40(4) of the Waste Management Act, 1996. In coming to this recommendation I have had regard to the following matters;

1. As an open windrow composting facility, international recommendations on suitable buffer zones indicate that the quantity of green waste being applied for is significantly in excess of what is appropriate given the distance to sensitive receptors - 150m.
2. Specific Environment Agency UK guidance on appropriate tonnages for open windrow composting indicate that the appropriate tonnage for acceptance would be approx. 3000tpa based on the compost site location proposed.

I consider that if an in-vessel or enclosed compost technology is to be used that a maximum waste acceptance of 7,500tpa would be acceptable.

The specific tonnage restrictions included in the recommended Proposed Decision are based on the Environment Agency (UK) Draft Guidance on Composting (*See Appendix 1 for further details*). This provides recommendations on appropriate tonnages and processes to be used (i.e. open vs. enclosed) and relates these factors to the location of the nearest sensitive receptor.

(4) Emissions to Air

Air emissions: There is landfill gas management infrastructure in place on-site (see section 2 above). Limited sampling of four engines has been carried out to-date. Schedule C sets ELVs and Schedule D required landfill gas monitoring. Condition 3.14.1 of the recommended PD requires a report to be submitted for agreement on the effectiveness of the landfill gas management infrastructure at the facility.

Dust/ PM₁₀: The primary source of dust will be from the capping/restoration works and to a lesser extent the proposed composting facility on site. The impact of the shredder and trommel in the composting process or the restoration works on dust generation was not assessed as part of the application. Condition 7.4 of the recommended PD requires that flexible covers and a water suppression system to be used to aid dust control. Dust monitoring results indicated an exceedence at the location adjacent to the M50 motorway (DM4). Schedule D of the recommended PD requires that monitoring of dust shall occur quarterly, at six monitoring points, one of which will be adjacent to the composting area. Monitoring for PM₁₀ is also required on a quarterly basis due to the extent and nature of restoration work to be undertaken.

Bioaerosol: The applicant did not include any details on bioaerosol generation at the facility. Emissions of bioaerosols occur primarily during turning and screening of compost.

Controls in this recommended PD which will significantly reduce the quantities of bioaerosols, include:

- Use of dust covers during screening (Condition 7.4)
- Dampening and use of water sprays on compost material during screening (Condition 7.4)

In addition, monitoring will be required annually at four locations upwind and downwind of the facility for *Aspergillus* and Mesophilic bacteria (Schedule D).

Odour: The primary source of odour on site from on-going waste activities will be from the proposed composting facility, however it is limited to green waste and a quantity of 3,000tpa if the windrow process is chosen or 7,500 tpa if the invessel/ enclosed process is chosen. Condition 7.5.1 of the recommended PD requires an odour management plan prior to commencement of the composting operations.

Noise: Noise emission limits of 45L_{eq}dBA and 55 L_{eq}dBA will be applied for night-time and daytime, respectively. I have restricted waste acceptance and processing hours to daytime hours as noise emission limits for site plant items were not estimated and therefore the 55dB noise emission limit will apply. There are three noise sensitive locations (adjacent to the observatory, hospital and residential area) and five boundary noise monitoring locations.

(5) Emissions to Groundwater

The bedrock geology underlying the facility is classified by GSI as 'Lower Carboniferous limestone and mudstone'. There is no published aquifer map / groundwater protection scheme for the solid geology of Dublin. However the GSI have produced one for County Meath and as the site is located 6km from the Meath border information was extrapolated from Co. Meath to Co. Dublin based on the similar geological types in the adjoining counties. The classification of aquifer in the Dunsink site is classed as 'moderately productive only in local zones'. Flow estimates made during drilling recorded between 1-10m³/day to a maximum of 20m³/day which indicate a 'poor' to 'local' aquifer Pu/Pi. The natural overburden thickness varies from 1.8m (BH6) at the northern end of the site to 5m (BH9) at the southern end. This overburden is composed of a thin layer of brown topsoil (which is not continuous) overlying a black boulder clay which rests on top of the Carboniferous bedrock. There is a minor fault running in a north east – south west direction through the site and although not detected it is likely that interspersed tongues of permeable sand and gravel are found throughout.

Groundwater flow direction was based on groundwater levels from 1998 and topographical levels from 1997 and is believed to be flowing in an easterly direction recharging into Scribblestown stream. The aquifer vulnerability is classed as "extreme" to 'high' due to the thickness of the overburden underlying the landfill.

Results from groundwater monitoring have indicated that the facility has impacted on groundwater resources at the facility. Elevated levels of parameters have been recorded in most groundwater boreholes. In particular BH11 has significant Ammonia levels (6-20mg/l). However it is considered that the final capping and restoration of the facility will minimise the impact of leachate on groundwater.

(6) Emissions to Surface Waters

The Scribblestown stream flows from west to east along the northern boundary of the site. The southern part of the site is drained to a small tributary, which flows along the southern boundary before joining the Scribblestown stream at the eastern boundary. The Scribblestown stream then flows eastwards from the site before turning in a southerly direction to join the River Tolka about 1km from site.

The Scribblestown stream has been culverted under the M50 motorway and parts of the landfill site for approximately 230m. The stream has also been regraded in places resulting in poor habitat for invertebrates and fish. Biological sampling (undertaken in December) indicated an overall lack of diversity and dominance of single pollution tolerant taxa, which indicates a value of Q1 – seriously polluted – Class D.

The results of surface water monitoring have shown that a deterioration of surface water quality has occurred downstream. Ammonia levels at SW1 (up to 180 mg/l), at SW2

(0.05 – 120 mg/l) and at SW3 (up to 3.6 mg/l) are elevated. Further at SW1 and 2, elevated Zinc has been detected being 88 mg/l and 55 mg/l respectively. In the Article 14 response the applicant states that in relation to sampling locations SW1-3 that ‘it is likely that the landfill has been impacting on the water quality downstream of the site’.

A proposal regarding installation of perimeter drains and attenuation ponds was included as part of the surface water management, however I deemed this proposal incomplete. A proposal detailing surface water management infrastructure is required to be submitted within six months of grant of licence, which take account of the requirements of a waste licence (Condition 3.12).

Roof water will continue to discharge to the soakaway. Drainage from the wheelwash will continue to go to the settlement pond and onwards to the stream. Drainage from site roads and hardstanding will be required to pass through oil and silt interceptors (Condition 3.12).

(7) Leachate management

An existing leachate management infrastructure is in place on site.

There are 2 routes for leachate collection on site:

1. Through a series of collection pipes that ultimately drain by gravity off site to the public sewer located on the Ratoath Road.
2. To a sump (located adjacent to the leachate lagoon) which is pumped into the lagoon where it is discharged by gravity flow to the public sewer located on the Ratoath Road.

On the 9th of April 2002 there was a pump malfunction at the landfill and the leachate discharged to the Scribblestown stream and ultimately to the River Tolka. The Eastern Regional Fisheries Board noted that ‘the discharge resulted in wipe out of all fish stocks in the River Tolka (and invertebrates excluding Ascellus and leeches) for 6.5km downstream to the estuary’. On the 17/09/02 Fingal County Council pleaded guilty to the offence of causing ‘deleterious matter’ to fall into the waters of the Tolka River.

Although a ‘Report on drainage alterations’ was submitted as part of the Article 14 response, it was found to be incomplete. Within three months of grant of the licence a report detailing the effectiveness of the collection system and recommendations for improvements of such a system & associated timeframes is required (Condition 3.13.1).

(8) Other Significant Environmental Impacts of the Development

No timescales were provided for the restoration of this facility. A restoration and aftercare plan was requested in the application stage and Article 14 request but was not received. I recommend that this additional information be required to be submitted to the Agency as per Condition 4.1 of the recommended PD within six months of the grant of licence. The applicant stated that it will be restored to parkland/amenity area and should include habitat restoration works on the Scribblestown Stream. Such restoration works shall be completed within three years of grant of this licence (Condition 4.6).

There are two proposed pNHA sites (the Royal Canal and the Liffey Valley) within 5km of the development. According to the applicant Duchas, National Parks and wildlife and the Eastern Regional Fisheries Board have been contacted about the waste licence application. The Eastern Regional Fisheries Board correspondence highlighted concerns regarding the April 2002 spill incident and the recommendation for use of telemetry on

site. Condition 3.16 of the recommended PD requires installation of telemetry to monitor water quality and leachate levels in the lagoon.

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

It is stated in Section B.8 of the application that the relevant Waste Management, Air Quality and Water Quality Plans are 'Not applicable'. However the waste management plan (WMP) for the Dublin Region including FCC was adopted by Dublin City Council on the 7.12.1998. Dunsink is referred to under this WMP Section 6.3.2 'Non hazardous municipal landfill' where it is stated that Dunsink Landfill 'closed in July 1996 now operates solely as a civic amenity'.

There is no relevant Air Quality Plan or Water Quality Plan for the region.

(10) Recommendations

- The recommended PD provides for the restoration and aftercare of the facility.
- Proposals for surface water management and leachate management infrastructure are to be submitted to the Agency three months from the date of grant of the licence in addition to a review of gas extraction infrastructure.
- I recommend that the facility be completed restored in three years of the date of grant of licence.

(11) Submissions

Appendix 2 contains a list of the submissions received relating to the application to date. I have had regard to the four submissions received in making my recommendation to the Board A summary of the issues raised in the submissions is provided below.

- Concern over the classes of activity whereby additional waste will involve incineration or thermal treatment on site.
- Concern over the application to continue ongoing operations at the tip head.
- Concern that further use of the landfill will impact on the safe environment of the hospital and its buildings and services.

Response: *The classes of activity permitted at the facility do not allow incineration, thermal treatment or landfilling of waste to be carried out on site. Part 1 Activities Licensed of the recommended PD provides details on activities allowed.*

- Belief that capping should be completed in 1 year.

Response: *Due to the large amount of soil needed for the works the timeframe for completion of works in full is 3 years.*

- Request to EPA to require the council to install a new access from the Ratoath Road to the Dunsink playing fields.

Response: *This proposal, if submitted as part of the Restoration Plan, can be assessed.*

- Concern over nuisances which have occurred in the past, including odours, waste being blown onto adjacent lands, views obstructed the landfill mounds.

Response: *Condition 7 of the recommended PD ensures that nuisances including odours, dust, litter and birds shall not be permitted at the facility.*

- Concern over groundwater pollution, which has been carried off site.

Response: *Condition 3.13 of the recommended PD ensures improvements to the leachate collection system on site shall take place, this shall improve the removal efficiency of leachate off site. Also monitoring of groundwater is on a quarterly basis, which will ensure better control of groundwater parameters and limits.*

Signed: _____

Date: _____

30 July 2003

APPENDIX 1

UK Environment Agency Technical guidance on composting operations (Draft October 2001)

Included below is a matrix of indicative buffer distances, which are related to composting technology type used and the tonnage of material processed. This table is extracted from UK Environment Agency Technical guidance on composting operations. As can be seen, the buffer zones required are greater for increased tonnages of waste composted. The buffer zone required is also greater where 'low technology' methods of composting are used *e.g.* open windrow (Column C). All other factors being equal, 'higher technology' options such as enclosed or in-vessel types of operations (Column A) require a smaller buffer zone.

Table 1 Indicative buffer distances (m) for smaller composting facilities

	Technology Type Used		
	A	B	C
5 to <10	2	2	4
10 to <25	2	4	10
25 to <50	3	10	25
50 to <125	15	35	55
125 to <250	30	65	90
250 to <500	60	110	150
500 to <1000	100	170	215
1000 to <1250	110	200	250

Technology required under this Proposed Decision to go to 7,500tpa

Technology proposed by applicant

Buffer zone available at this facility

A Green waste and kitchen vegetable waste enclosed composting either **in vessel** or within a sealed building

B Green waste and kitchen vegetable waste composted in the open air, including within a Dutch Barn type operation, and turning the compost by hand

C Green wastes and kitchen vegetable waste composted in the **open air**, including within a Dutch Barn type operation, **and turning the compost by machine**; sites wishing to compost animal manure (excluding cat and dog faeces) regardless of type of operation.