

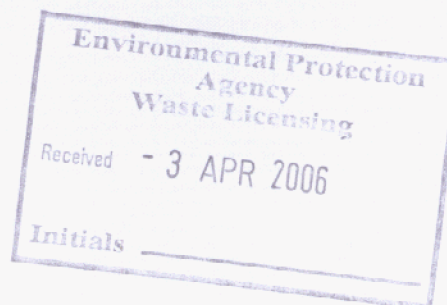
Block 10-3, Blanchardstown Corporate Park, Dublin 15

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Ms. Maeve McHugh,
Inspector,
Office of Licensing & Guidance,
Environmental Protection Agency,
Headquarters, PO Box 3000,
Johnstown Castle Estate,
Co. Wexford.



28th March 2006

EPA REF: 223-1

RE: Kilshane Cross Recycling Park, Newtown, Kilshane Cross, Dublin 15

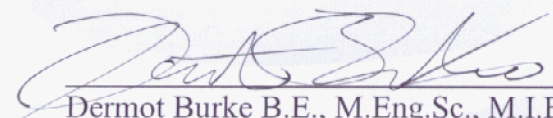
Dear Ms. McHugh,

Referring to your letter, dated the 21st of 2006, requesting additional information in accordance with Article 14(2)(b)(ii), in relation to the Kilshane Cross Recycling Park, please find enclosed the information as required.

The information is supplied in the form of one original and two copies. In addition, please find attached 16 copies of the requested information to the Agency in electronic searchable PDF format on CD-ROM

If you require any clarification of the information sent or any additional information, please do not hesitate to contact me.

Yours sincerely,


Dermot Burke B.E., M.Eng.Sc., M.I.E.I.
Project Manager
TES Consulting Engineers

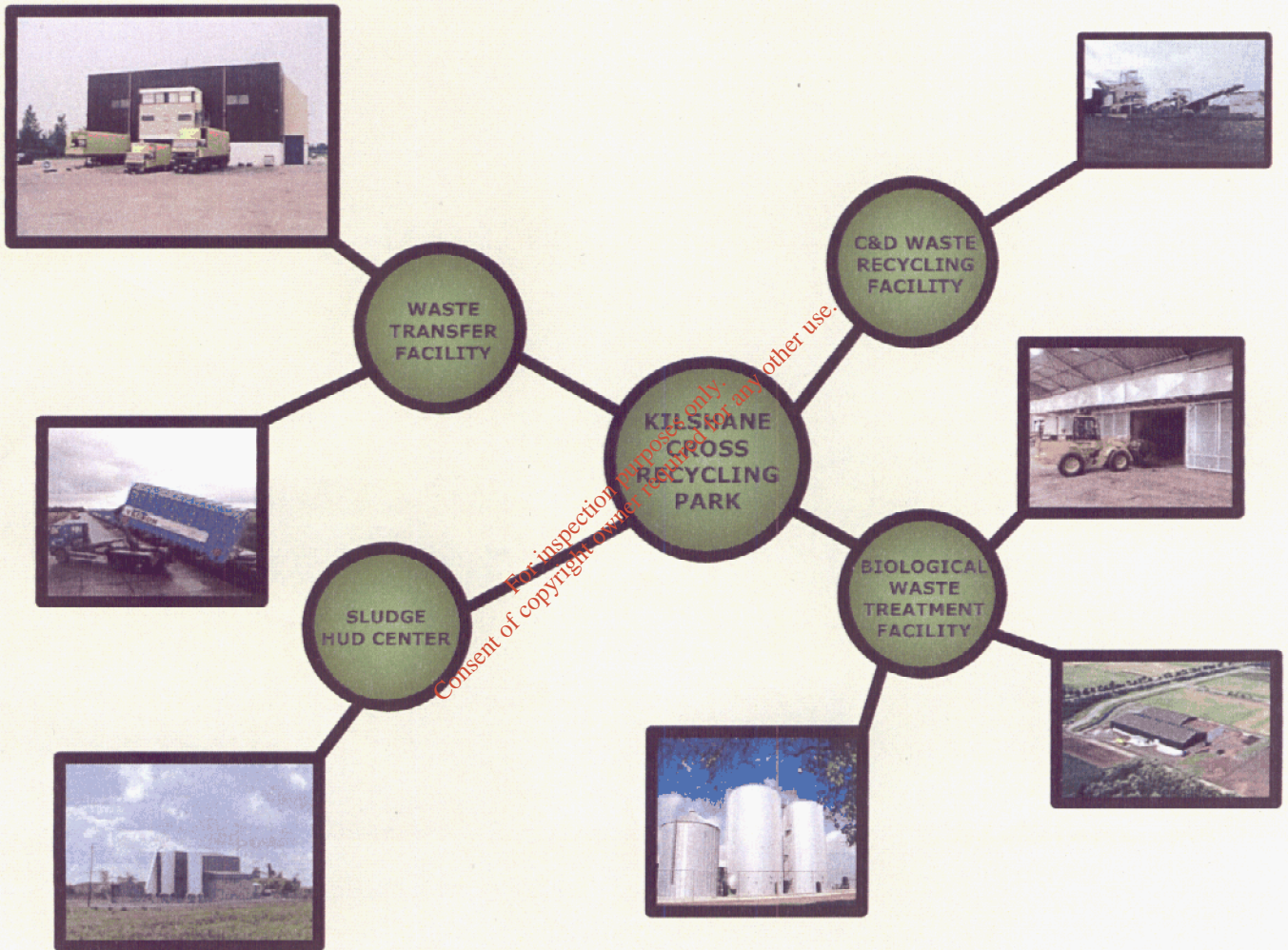
On behalf of Fingal County Council



Fingal County Council
Comhairle Contae Fhine Gall

ORIGINAL

KILSHANE CROSS RECYCLING PARK



WASTE LICENCE APPLICATION

ARTICLE 14 RESPONSE

MARCH 2006

Environmental Protection Agency
 Waste Licensing
 Received - 3 APR 2006
 Initials _____



Document Amendment Record

Client:	Fingal County Council
Project:	Kilshane Cross Recycling Park
Title:	Article 14 Response to the EPA

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Project Number: 1321			Document Ref: FCC Kilshane WLA		
0	Draft Article Response	DB	DG	SF	28/03/06
Revision	Purpose / Description	Originated	Checked	Authorised	Date



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Figure 4.3.1.a Proposed Monitoring Points

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ARTICLE 12 COMPLIANCE REQUIREMENTS**1. Biological Waste Treatment Facility**

In relation to the Biological Waste Treatment Facility provide the following information:

- a) *Which of the methods (composting or anaerobic digestion) do you propose to use at the facility?*

At this stage, it is not possible to identify the exact type of biological treatment technology that will be used to treat organic waste at the Kilshane Cross Recycling Park. This is due to the fact that the project will be procured under a PPP contract and until this contract has been finalised, the identity of the service provider, and hence the type of technology to be used at the proposed site (i.e. anaerobic or aerobic biological treatment) will not be known. This approach to the Environmental Impact Statement (EIS) was discussed and agreed with the two EPA inspectors at a pre-application meeting, held on the 17th of August 2005, and EIS and Waste Licence Application have included for the impacts of both composting and anaerobic digestion.

We would be happy to propose a meeting with Fingal County Council, the inspector and a senior inspector from the EPA, in order to discuss this issue further and to decide on the best way to proceed with the licence application, in light of the type of contract being pursued.

- b) *It should be noted that in December 2005 the Department of Agriculture and Food issued guidance on the conditions of approval of plants wishing to process animal by-products including catering waste. Such plants will need to be approved by the Minister for Agriculture and Food under the Animal By-Products Regulation (Regulation (EU) 1774/ 2002).*

With reference to this guidance please provide information as to the operation of the Biological Waste Treatment Facility.

The biological treatment facility proposed for Kilshane Cross Recycling Park will be operated in strict accordance with the requirements of the Animal By-Product (ABP) regulations. When the facility has been built and the service provider is in a position to commence the processing of catering waste, a formal application detailing the exact type of treatment and processing will be submitted to the Department of Agriculture and Food, which is in accordance with the ABP guidelines.

Generally, the following operational procedures will be adhered to at the proposed facility:

Feedstock

Only Category 3 material will be treated at the proposed facility and will comprise food waste collected from households and commercial premises. Green waste will

also be treated at the facility, but it is not categorised as an ABP. All material will be treated in a fully enclosed building.

Premises

There will be total physical separation between the proposed facility and farm animals, as required by the ABP guidelines. The facility will be surrounded on all sides by permanent stock-proof fencing, of a minimum height of 1.8m and the entrance/exit gates will be kept locked at all times when the facility is closed.

Equipment

All material will be treated in enclosed reactors with:

- (i) Installations for monitoring temperature against time
- (ii) Recording devices to record monitoring measurements and
- (iii) An adequate safety system to prevent insufficient heating

Adequate facilities will also be provided for cleaning and disinfecting of vehicles and containers.

All equipment will be kept in good working order and will be inspected regularly for suitability of use. Records of inspections and maintenance will be kept on the premises.

Monitoring

All samples taken will be sent to an approved laboratory for microbiological testing by the Department of Agriculture and Food.

Hygiene requirements

- All material will be treated within 24 hours of arriving at the facility.
- Containers, receptacles and vehicles used for transporting untreated material will be cleaned in a designated area.
- A fully documented pest-control programme will be implemented throughout the whole facility.
- Separate machinery or attachments, such as buckets for transporting untreated and processed material, will be used at the facility and will be thoroughly steam cleaned between each use.
- A one-way system of material flow will be put in place at the facility, in order to prevent recontamination of processed products with untreated incoming material.

Processing Standards

Category 3 material used as raw material at the proposed facility will be submitted to the following treatment requirements:

- Maximum particle size before entering the reactor: 12 mm;
- Minimum temperature in all material in the reactor: 70 °C; and;
- Minimum time in the reactor at 70 °C (all material): 60 minutes.

Other equivalent operating parameters may also be accepted and agreed by the Department of Agriculture, once the service provider has been appointed and in advance of any waste treatment at the facility.

Sampling of products and record keeping

All sampling and monitoring will be in accordance with the approval as issued by the Department to the facility.

All records relating to all aspects of the treatment process will be kept on site for a minimum period of 2 years and will be made available to the Department upon request.

HACCP Plan

A Hazard Analysis and Critical Control Points (HACCP) plan will be devised for the facility and will pay particular attention to the following points:

- Procedures at the plant for reception of by-products;
- Processing of material to the relevant standards;
- Hygiene controls – including cleansing and disinfection facilities, as well as arrangements to prevent cross-contamination of processed material with raw material through the use of flow diagrams;
- Record keeping including laboratory sampling results;
- Details of corrective actions to be taken as necessary.

Collection and Transport

Category 3 materials will be kept separate and identifiable during all stages of collection and transportation. End products will also be kept separate from incoming untreated materials.

- c) *With reference to the working document 'Biological Treatment of Biowaste (2nd draft)' provide the following information:*
- a. *What Class of compost/ digestate (whichever is relevant) do you propose to produce?*
 - b. *A list of EWC codes of waste proposed to be accepted at the Biological Waste Treatment Facility.*

Class of Compost Products

The proposed draft Biowaste Directive has been made redundant and will thus not be transposed to EU legislation. However, in light of the lack of quality standards in Ireland and the EU, it is reasonable to use the quality standards specified within the redundant draft Biowaste Directive.

The main aim of the proposed facility will be to produce high quality sanitised, stable and mature compost products, which are of Class 1 quality. However, the quality will depend on the quality of the incoming material. Some of the products may be of Class 2 material or at the worst stabilised biowaste.

The Class 1 and 2 products will be supplied for use in outlets such as hobby gardening, landscaping, horticulture and agriculture (in accordance with the ABP guidelines). If it arises that a batch of compost is of low quality and is classified as stabilised biowaste, it could be used in applications such as landfill cover or in motorway construction. The main focus of the project is however to produce compost products of the highest quality, which can be sold on the market and which have the potential to generate revenue from sales.

EWC Codes

Only non-hazardous organic waste will be accepted at the proposed facility for treatment. The following list comprises all EWC codes for the types of waste to be accepted at the facility.

Waste Type	EWC Code
Paper and Cardboard	20 01 01
Biodegradable kitchen and canteen waste	20 01 08
Woodchip	20 01 38
Green Waste	20 02 01
Soil	20 02 02
Waste from markets	20 03 02
Oversize fines from composting not suitable to be sold as compost.	20 03 99
Green waste from agriculture, horticulture, forestry etc.	02 01 03

2. Section D.1.b - Design for Site Roads

This section does not contain information about the design of the site road. Please submit same.

Drawing number 1234/01/215, as submitted in the original application, gives information of the design of the site road. the site road will be constructed as follow:

- 45mm stone mastic asphalt wearing course on;
- 55mm dense bitumen macadam base course on;
- 150mm dense bitumen macadam road base on;
- 150mm sub-base to Clause 804 aggregate material on;
- Suitable granular fill material to Clause 6A aggregate material (where required).

3. Section E - Emissions to Atmosphere

- a. *Provide details, including air modelling where appropriate of the emissions to air as a result of the operation of the Sludge Hub Centre, based on the type and quantity of fuel to be used at this facility.*

All proposed stack emissions to atmosphere from the operation of the sludge hub centre were assessed during the dispersion modelling assessment. A personal communication received by Odour Monitoring Ireland from EPA licensing officer suggested that emission limit values of classical air pollutants, such as Carbon monoxide, Sulphur dioxide, Oxides of Nitrogen and Particulate matter as PM₁₀, should be used within the assessment. These limit values are specified within the Draft BAT Notes for the Waste Sector (November 2002). These values were used within the assessment. The proposed volumetric airflow rate and temperature of the emission air stream were taken from similar sludge drier technologies. These emission limit values were higher than those historical measured from similar sludge drier plants located on other sites in Ireland.

Residual odours from the odour control technology upon the sludge drier were also modelled within the dispersion assessment, in order to define emission limit values for odour emissions.

All dispersion modelling was performed in accordance with international recommendations.

- b. *Provide an additional set of dust monitoring results for the four monitoring locations referred to in Figure 3.4.1. of the EIS as well as for one additional location at the southwest corner of the site.*

Additional dust monitoring was carried out at the Kilshane Cross site as requested. Dust monitoring took place at five locations throughout the site, at the locations identified in Figure 3.4.1 of the EIS, as well as at an additional location in the southwest corner of the site. Please find attached Figure 3.4.1a, which is a revision of the original EIS figure and which shows the location of the dust monitoring points. Dust gauges were set up at the five nominated locations in the Kilshane Cross site. The testing period was from 24/02/06 to the 24/03/06, a total of 28 days. After this period the samples were collected and submitted to the Enterprise Ireland Air Quality Laboratory in Glasnevin, Dublin for analysis. The results are presented in the Table 3.1 below.

Table 3.1 Dust Monitoring at Kilshane Cross from 24/02/06-24/03/06

Monitoring Period	Dust Monitoring Results (mg/m ² .d)				
	D1	D2	D3	D4	D5
24/02/06-24/03/06	248	345	269	206	116

All samples are within the mean daily dust deposition limit value of 350 mg/m².d, as recommended in the T.A. Luft Guidelines.

4. Section E.5 - Noise Emissions

Provide at least one additional set of background noise monitoring results for both daytime and night time. Monitoring should be carried out at four noise monitoring locations referred to in Figure 3.4.1 of the EIS as well as for one additional location at the south-west corner of the site

Daytime (08:00 – 22:00) and night time (22:00 – 08:00) noise monitoring was carried out at the six locations shown on Figure 3.4.1a on the 14th to 16th March 2006, as requested. The monitoring points are described in Table 4.1. All measurements were carried out in accordance with ISO 1996, Part 1 (Description and Measurement of Environmental Noise – Part 1: Basic Quantities and Procedures).

**Table 4.1 Description of Noise Monitoring Points at Kilshane Cross
March 2006**

Monitoring Point	Location
N1	At boundary with road adjacent to dwelling to south of proposed development.
N2	Rear boundary of dwelling to south of proposed development.
N3	North of proposed development near to M2 motorway.
N4	At entrance to residential development to north of proposed development.
N5	New monitoring location in southwest corner of proposed development.
N6	Continuous monitoring location (new) at eastern boundary of proposed development.

Weather conditions during the March survey were variable, with rain occurring during the continuous monitoring period.

The environmental noise levels were determined using the A-weighted network and fast response. A Larson Davis 824 precision Integrating Sound Level Analyser and Frequency Analyser were used. At each of the noise measurement points the Sound Level Meter (SLM) was mounted on a tripod, to ensure that the microphone was maintained at 1.5 metres above ground level and at least 3.5 metres from any noise reflecting surface. The logged data from monitoring was later downloaded using software and a personal computer.

All acoustic instrumentation was calibrated before and after each and no drift of calibration was observed (calibration level 114 dB at 1000 Hz).

At each of the monitoring locations the following data were recorded:

- **L(A)eq:** Equivalent Continuous A-weighted Sound Level. The continuous steady noise level, which would have the same total A-weighted acoustic energy as the real fluctuating noise measured over the same period of time.
- **L(A)10:** The noise level that is equalled or exceeded for 10% of the measurement period; and

- **L(A)90:** the noise level that is equalled or exceeded for 90% of the measurement period.

Table 4.2 contains results from the noise monitoring locations N1 – N5, described in Table 4.1. Table 4.3 contains the results of continuous monitoring carried out at N6.

Table 4.2 Noise Monitoring Results – 30 minute intervals, dB(A)

Location	Date	Time	L(A) _{eq}	L(A) ₁₀	L(A) ₉₀
DAYTIME					
N1	14/03/06	11:08	78.5	81.2	67.8
N2	14/03/06	11:41	77.1	79.0	66.1
N3	14/03/06	09:55	79.0	76.4	64.4
N4	14/03/06	13:12	74.8	78.4	66.8
N5	14/03/06	12:20	82.3	86.8	67.7
NIGHT TIME					
N1	14/03/06	23:20	66.9	71.4	59.2
N2	15/03/06	00:37	62.9	64.0	58.5
N3	14/03/06	22:00	65.6	69.0	59.1
N4	14/03/06	22:41	66.6	68.4	57.4
N5	15/03/06	00:00	62.5	64.7	57.7

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Table 4.3 Results of Continuous Monitoring at N6 – 1 hour intervals, dB(A)

Date	Time	L(A) _{eq}	L(A) ₁₀	L(A) ₉₀
15/03/06	12:00	80	82.6	75.4
15/03/06	13:00	81.7	84.7	77.1
15/03/06	14:00	81.9	84.0	77.2
15/03/06	15:00	76.4	78.2	72.3
15/03/06	16:00	76.8	78.6	73.3
15/03/06	17:00	76.2	77.9	73.3
15/03/06	18:00	78.1	79.6	74.2
15/03/06	19:00	76.2	78.6	72.6
15/03/06	20:00	75.2	77.0	73.1
15/03/06	21:00	76.1	77.8	74.2
15/03/06	22:00	77.5	81.1	74.0
15/03/06	23:00	79.8	83.7	71.8
16/03/06	00:00	79.6	82.8	71.5
16/03/06	01:00	73.6	77.6	64.6
16/03/06	02:00	70.8	73.2	63.6
16/03/06	03:00	76.9	80.2	66.2
16/03/06	04:00	71.2	74.0	66.4
16/03/06	05:00	69.8	72.6	65.6
16/03/06	06:00	71.2	73.9	67.1
16/03/06	07:00	72.9	74.8	68.4
16/03/06	08:00	72.2	74.3	67.1
16/03/06	09:00	75	76.5	68.8
16/03/06	10:00	74.3	76.3	69.1
16/03/06	11:00	75	77.0	70.4
Average		75.8	78.2	70.7

Monitoring Location N1

The daytime equivalent continuous sound pressure level (L(A)_{eq}) recorded at N1 was 78.5dB(A) and the night time L(A)_{eq} was 66.9dB(A). During the daytime monitoring period the dominant source of noise was aircraft flying overhead, road traffic on the old N2 and the new M2 motorway. During the night time period, road traffic was the main source of noise at monitoring location N1.

Monitoring Location N2

The L(A)_{eq} recorded during the daytime at N2 was 77.1dB(A) and the night time L(A)_{eq} was 62.9dB(A). During the daytime, the dominant noise sources were aircraft and road traffic on the motorway to the north. Quarrying activities at Huntstown Quarry also contributed to noise levels. During the night time monitoring period, road traffic was the dominant noise source at N2.

Monitoring Location N3

The daytime L(A)_{eq} at N3 was 79.0dB(A) and the night time L(A)_{eq} was 65.6dB(A). Frequent aircraft flying overhead and road traffic on surrounding roads were the dominant sources of noise at N3 during the daytime monitoring period. At night, road traffic on the old N2 was the dominant source of noise.

Monitoring Location N4

At monitoring location N4, the $L(A)_{eq}$ during the daytime monitoring period was 74.8dB(A) and the night time $L(A)_{eq}$ was 66.6dB(A). The dominant source of noise during the daytime was road traffic on the old N2, aircraft also contributed to noise levels. Road traffic was also the main source of noise during the night time monitoring period.

Monitoring Location N5

The daytime $L(A)_{eq}$ recorded at N5 was 82.3dB(A). The night time level was 62.5dB(A). During the daytime monitoring period the dominant noise sources were aircraft flying overhead and quarrying activities. Noise emissions from the adjacent power station were also audible. At night time, noise emissions from the power station and background traffic noise were audible.

5. Section F.2 - Odour Monitoring

Section F.2 of the Application should also refer to arrangements for odour monitoring at the facility. Please provide this information.

Odour monitoring of scheduled emissions will be performed quarterly from the stack emission points located within the site. All odorous air will be ducted to odour control technologies and abated. All odorous processes will be maintained under negative pressure extraction and thus there will be no significant fugitive odour emissions from any process located within the site.

Triplicate odour samples will be taken from the proposed odour emission points to be located upon:

- The Sludge Drier odour control unit;
- The Waste Transfer Station odour control unit; and
- The Biological Treatment Facility odour control unit.

Continuous in-stack dilution will be performed on all odour sampling locations, where elevated temperature and moisture content is present within the exhaust air stream.

Airflow rate and temperature measurements will be performed on these emission points. The overall mass odour emission rate from each process will be compared to the design specifications, in order to ensure compliance and odour free conditions in the vicinity of the site.

All odour sampling and measurement will be performed in accordance with the PrEN13725:2003 Olfactometry standard. All airflow rate and temperature measurements will be performed in accordance with ISO10780 international standard.

**6. Section G.1 - Raw Materials, Substances, Preparations and Energy and
Section G.2 - Energy Efficiency**

Provide details of the type and quantity of fuel to be used at the Sludge Hub Centre for the drying process. Based on your answer to this question and to questions 1 and 3a above please complete sections G.1 and G.2 of the application.

Please refer to Attachment G.1 of the original Waste Licence Application, which give details of the main raw materials, substances, preparations and energy to be used at the Kilshane Cross Recycling Park and additional information is provided below.

It is envisaged that natural gas will be used as the main fuel supply for the Sludge Hub Centre. It is estimated that the gas usage will be a maximum of 25 million kW.hrs per annum. Due to the proposal to let the contract on a Design-Build-Operate basis, contractors may propose alternative fuels. Any alternative fuel proposed must comply with the emissions criteria from the Environmental Impact Statement.

Please refer to Attachment G.2 of the original Waste Licence Application for details on energy efficiency. The following is additional information relating to energy efficiency.

There is a potential for use of biogas from anaerobic digestion and/or biofuels, such as willow. Willow coppicing is an option for the reuse of the dried sludge product. The willow fuel produced by this could be used as a fuel in the sludge drying process. Any use of alternative fuels would depend on the equipment and fuel being an economically viable option.

The main energy use (approximately 90%) for the sludge drying plant is to provide heat to the dryer for the thermal drying. The tenders will be evaluated technically based on their proposed energy efficiencies.

7. Section H.3 - Waste Handling

Based on your response to question 1 above please provide an update of Section H.3 of the application.

Please refer to Section 3.2.6 of the EIS, which gives a description of the waste handling procedures for each of the facilities. In addition to these handling procedures, the operations in the Biological Treatment Facility will be in accordance with Department of Agriculture and Food guidelines for the processing of Animal By-Products (ABP). The operational procedures to be adopted at the facility are detail in the answer to question 1(b) above.

When the facility has been built and the service provider is in a position to commence the processing of catering waste, a formal application detailing the exact type of treatment and processing will be submitted to the Department of Agriculture and Food, which is in accordance with the ABP guidelines.

ARTICLE 13 COMPLIANCE REQUIREMENTS

Provide updates on the EIS as relevant in relation to all of the matters referred to under Article 12 compliance requirements above.

Your reply to this notice should include a revised non-technical summary (Application Form and EIS) which reflects the information you supply in compliance with the notice, insofar as that information impinges on the non-technical summary

Please find included revised versions of the Application Form and EIS non-technical summaries.

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North arrow pointing North.

> SITE BOUNDARY
 ⊕ N1 NOISE MONITORING POINT
 ⊕ D1 DUST MONITORING POINT
 ⊕ SW1 SURFACE WATER MONITORING POINT
 ⊕ BH1 GROUNDWATER MONITORING POINT
 ⊕ F1 FILL WATER MONITORING POINT
 ⊕ KS1 RICK SAMPLING MONITORING POINT

Extract from OSI 2 1st Class Licence No. 13 Dublin
 NOTE: Original Survey Licence No. EN001502
 (Ordnance Survey 1:25000 Government of Ireland)

40m 0 40m 80m 120m

NO.	REVISION	DATE	BY
1	As Issued		

Project:

Fingal County Council
 Comhairle Contae Fhine Gall

KILSHANE CROSS RECYCLING PARK

Drawing Title:

PROPOSED ENVIRONMENTAL MONITORING POINTS

Scale: 1:2000 (A3)

Drawn by: Cain Pascoe

Checked by: JMS

Engineer in Charge: Sean Flynn

Sept 14th 2005

TES CONSULTING ENGINEERS

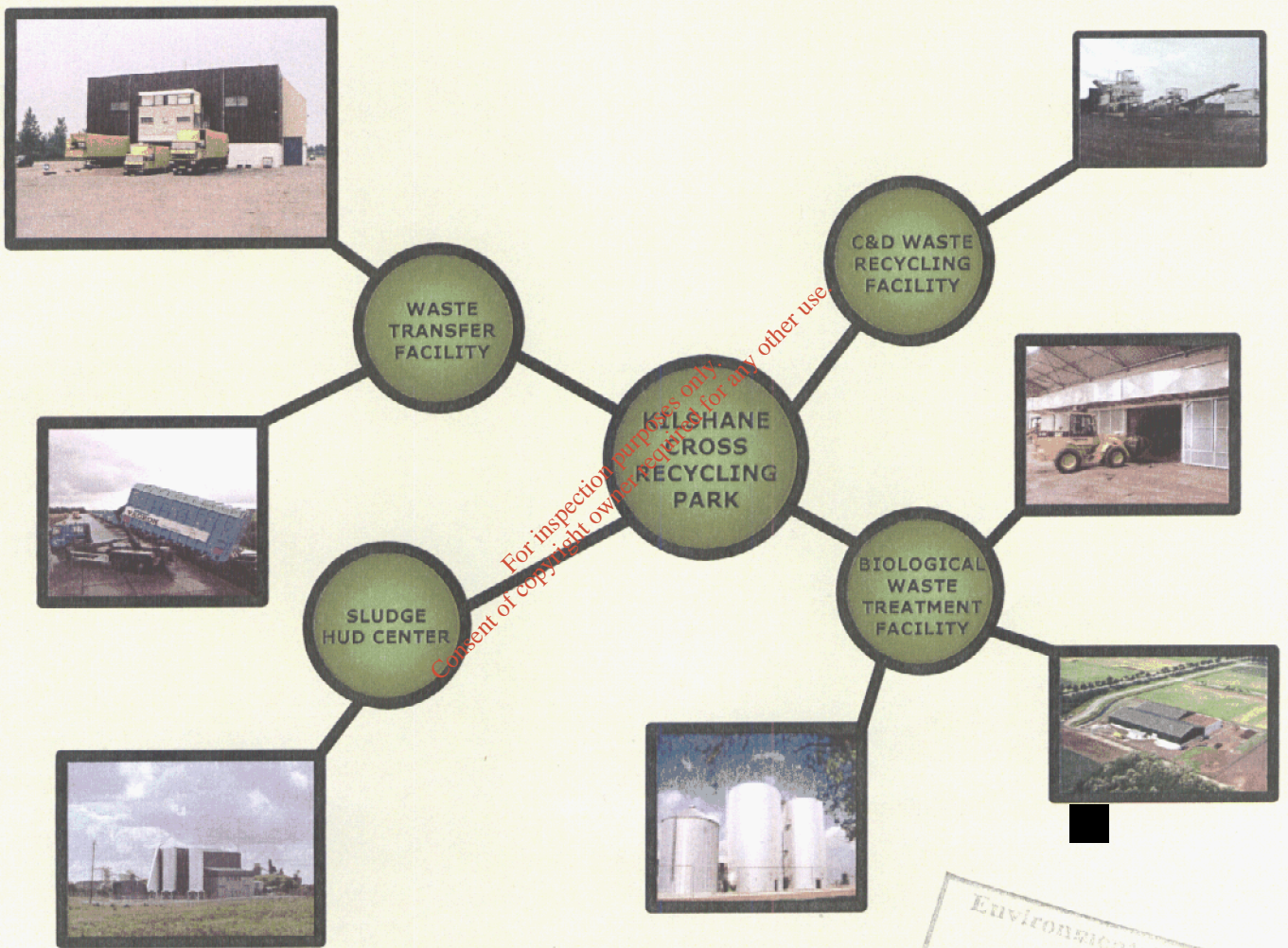
Quantity No: FIGURE 3.4.1



Fingal County Council
Comhairle Contae Fhine Gall

ORIGINAL

KILSHANE CROSS RECYCLING PARK

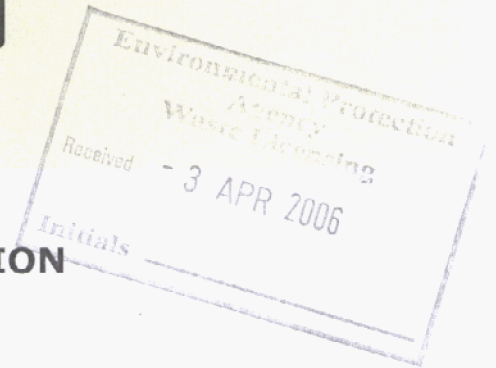


WASTE LICENCE APPLICATION

ATTACHMENT A1: NON-TECHNICAL SUMMARY

REVISED


MARCH 2006



Document Amendment Record

Client:	Fingal County Council
Project:	Kilshane Cross Recycling Park
Title:	WLA Non-Technical Summary

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Project Number: 1234			Document Ref: Kilshane Cross WLA NT		
0	Revised Non-Tech	DB	DG	SF	28/03/05
Revision	Purpose / Description	Originated	Checked	Authorised	Date
					

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FINGAL COUNTY COUNCIL

**KILSHANE CROSS RECYCLING PARK,
NEWTOWN, DUBLIN 15**

ENVIRONMENTAL IMPACT STATEMENT

**WLA NON-TECHNICAL SUMMARY
REVISED**

MARCH 2006

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ATTACHMENT A.1 NON-TECHNICAL SUMMARY

This non-technical summary is prepared in accordance with Article 12(1)(u) of the Waste Management (Licensing) Regulations S.I. 395 of 2004.

Article 12(1)

- (a) The name, address and contact details of the applicant are:
Fingal County Council,
P.O. Box 174,
County Hall,
Swords,
County Dublin.
Tel: 01-8905000
Fax: 01-8906299
Name of Contact: Mr. Eamonn Walsh
- (b) The planning authority in whose functioning area the activity will be carried out on is Fingal County Council. An application for planning permission for the proposed development has been sent to An Bord Pleanála.
- (c) The sanitary authority relevant to the proposed development is the Water Services Department of Fingal County Council.
- (d) The location of the proposed development is Newtown, Kilshane Cross, Dublin 15. The National Grid Reference for the proposed development is E3115, N2420
- (e) Fingal County Council proposes to develop a Waste Recycling Park. The Recycling Park will consist the following waste management facilities:
- A **Construction and Demolition Waste Recovery Facility** processing 75,000 tonnes per annum (tpa);
 - A **Biological Waste Treatment Facility** treating 45,000tpa of segregated domestic and commercial organic waste;
 - A **Waste Transfer Facility** processing 65,000tpa of municipal solid waste; and
 - A **Sludge Hub Centre** treating 26,511tpa of de-watered sludge cake from wastewater treatment facilities in County Fingal.
- (f) The relevant activities to which this application relates as specified in the Third and Fourth Schedule of the Waste Management Acts 1996 to 2003 are detailed below.

Third Schedule, Class 11- "Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this schedule".

Third Schedule, Class 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".

The **Principle Activity** to be carried out at the site is:

Fourth Schedule, Class 2- "Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes)."

Fourth Schedule, Class 3- "Recycling or reclamation of metals and metal compounds."

Fourth Schedule, Class 4- "Recycling or reclamation of other inorganic materials."

Fourth Schedule, Class 9- "Use of any waste principally as a fuel or other means to generate electricity."

Fourth Schedule, Class 11- "Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule".

Fourth Schedule Class 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".

- (g) The following is the nature and quantity of the waste which will be treated/recovered/disposed at the proposed development:

Waste Type	Tonnes per annum	EWC Code ¹
Household Waste	60,200	20 03 01
Commercial Waste	49,800	20 03 01
Sewage Sludge	26,511	19 08 05
Construction & Demolition	75,000	17 00 00

- (h) The table below presents an estimate as to the consumption of materials used on-site. The final raw material, substances, preparations and energy requirements for each facility will be agreed with the Agency prior to construction of each facility.

¹ European Waste Catalogue Codes

Material/ Resource	Biological Treatment Facility	Sludge Hub Centre	Waste Transfer Station	C&D Facility	Amount Stored
Hydraulic Oil	3,000 litres	3,000 litres	3,000 litres	3,000 litres	500 litres per facility
Electricity	4,000,000 kilowatt hours per annum	2,500,000 kilowatt hours per annum	10,000 kilowatt hours per annum	20,000 kilowatt hours per annum	None
Diesel	150,000 litres per annum	See note below ⁺	25,000 litres per annum	25,000 litres per annum	10,000 litres per facility
Water	See note below [@]	Up to 650m ³ /day [#]	1,000 m ³ per annum [*]	1,000 m ³ per annum [*]	5,000 litres per facility

⁺ It is anticipated that natural gas will be the main fuel for the drier. The consumption would be a maximum of approximately 25 million kW.hrs per annum.

[@] Normal water input would be 200 litre per ton input. That is between 6000m³ and 9000m³ for a 30,000 and 45,000 tonne biological treatment plant respectively.

[#] There is a water use in the drying process for cooling water, scrubbing etc.

^{*} Domestic requirement

There is a potential for use of biogas from anaerobic digestion and/or biofuels, such as willow. Willow coppicing is an option for the reuse of the dried sludge product. The willow fuel produced by this could be used as a fuel in the sludge drying process. Any use of alternative fuels would depend on the equipment and fuel being an economically viable option.

The main energy use (approximately 90%) for the sludge drying plant is to provide heat to the dryer for the thermal drying. The tenders will be evaluated technically based on their proposed energy efficiencies.

- (i) It is proposed to develop four separate waste management facilities at the Kilshane Cross Recycling Park site, i.e. a Construction & Demolition Waste Recovery Facility (C&DWRF), a Biological Treatment Facility (BTF), a Waste Transfer Facility (WTF) and a Sludge Hub Centre (SHC). The facilities will be developed using the Public Private Partnership (PPP) process, with each facility being developed and operated by different private contractors. The whole Recycling Park will be covered by a single planning approval and waste licence, with Fingal County Council being the licence and permission holders.

The exact nature of the treatment processes or technologies will emerge from the procurement process and thus have yet to be agreed. The following is a brief description of the processes to be carried out at each facility.

Construction & Demolition Waste Recovery Facility (C&DWRF)

The C&DWRF will mainly deal with the recovery of construction and demolition (C&D) waste from industrial, commercial and household sources. The materials to be treated will mainly consist of soil, rubble, old road material, reinforced concrete, bricks, blocks, etc. This material will be brought on-site in bulk haulage vehicles and large skips, and will be the result of large development and infrastructural projects. The facility will produce a variety of aggregate types depending on the final market for the material. This material will be stockpiled in a designated area of the site and it will be sold as an aggregate product.

All waste upon arrival at site will be weighed at the facility weighbridge and will be directed to the outdoor reception/ processing area. The unprocessed C&D waste will be fed into a hopper by a grab crane or loading shovel depending on the type of material. From the hopper

the material will be fed into a mobile crusher and the crushed material will go by conveyor belt to a screening rig. Before the screens, the conveyor passes a magnet, which extracts steel and metal (e.g. reinforcing bars) from the crushed material. The screens sort the crushed material into different aggregate sizes and put them into stockpiles depending on size. The grade of material recovered will be largely dependent on available market outlets and the processing equipment will have the flexibility to produce a number of grades.

The aggregates produced will be tested for their suitability as a civil engineering material. The materials produced at the facility will have to match the properties of virgin building materials in order to compete in the market.

Biological Treatment Facility (BTF)

The BTF will utilise either aerobic in-vessel composting or anaerobic digestion (AD) to treat biowaste collected in the Dublin Region. Other waste streams may also feed into the facility and include separately collected kitchen waste from restaurants, hotels and other commercial sectors. The exact process to be used in the BTF will emerge from the procurement process. The operations in the Biological Treatment Facility will be in accordance with Department of Agriculture and Food guidelines for the processing of Animal By-Products (ABP).

In-vessel Composting

The composting facility will be fully enclosed in a large building and will comprise the following elements:

- Waste reception area;
- Pre-treatment area;
- In-vessel composting units;
- Maturation pads;
- Odour abatement systems;
- Process control and monitoring equipment; and
- Post treatment and bagging area.

The processing steps of the in-vessel composting systems will include waste acceptance and pre-treatment of incoming waste, biological processing, maturation, post treatment, and process control and monitoring. All waste to be accepted at the facility will be inspected and deposited in the enclosed waste reception area, where it will undergo pre-treatment. Removal of contaminants from the feedstock will assist in producing high quality compost. Once the material has undergone the relevant pre-treatment processes the waste will then be placed in the in-vessel units and the in-vessel composting process will begin.

In-vessel systems supply optimum conditions for microbes to live and breakdown the waste by providing optimum temperature, aeration and moisture in an insulated system. Maintaining high temperatures (60-65°) within the vessel will ensure that a sanitised product will be produced. The principle of in-vessel composting systems is to maintain these optimum conditions for as long as required. Residence times in in-vessel systems can vary from a few hours to approximately 2 weeks.

Maturation usually takes place by placing piles of the treated material on aerated floors, which continue to supply air to the material. Maturation periods usually last for 6-8 weeks depending on the quality of the product required. Additional screening of the finished product may also be required to remove further contaminants from the product. In-vessel composting processes are typically fully automated, which allow site operators to continuously monitor key process parameters such as pH, temperature, moisture content, aeration, etc. Monitoring and control of the above parameters will ensure that the process runs efficiently and that there are no significant impacts on the environment.

Anaerobic Digestion

Anaerobic Digestion (AD) is a biological process where organic waste can be broken down by micro-organisms in the relative absence of oxygen to produce a mixture of biogas, solid digestate and nutrient rich wastewater. Biogas consists primarily of a mixture of Methane (40-70%) and Carbon Dioxide (30-60%), with small quantities of hydrogen, hydrogen sulphide, and ammonia present. Biogas is commonly used in a Combined Heat and Power (CHP) station to produce electricity and heat through a gas engine and steam boiler. Energy produced can be used to fuel the AD plant and the excess can be exported to the national grid or can possibly be used to provide power to the other facilities in the Recycling Park.

The main elements of an AD processing facility comprise:

- Waste reception building;
- Pre-treatment area;
- Pasteurisation plant – to meet Animal By-Products Regulations
- Gas handling equipment such as pipes, valves, flares, gas cleaning and storage equipment;
- Gas engines, turbines and electricity generators;
- Steam generators - to provide heat to the digester;
- Digestate dewatering equipment such as presses, centrifuges, effluent storage;
- Maturation pads;
- Odour abatement systems;
- Process control and monitoring equipment; and
- Pre and post-treatment equipment such as screens, magnetic and eddy current separators.

All waste to be accepted at the facility will be inspected and deposited at the enclosed waste reception building where it will undergo pre-treatment. Once the material has undergone the relevant pre-treatment processes the waste will then be placed in the digester and the AD process will begin. Digesters are usually constructed of steel and/or reinforced concrete. Reactors may be vertical or horizontal depending on the technology. The reactor volume will depend on the volume of waste throughput and the residence time.

Centralised anaerobic digestion plants (CAD plants) can be mesophilic (about 35°C) or thermophilic (about 55°C). The digesters operate mainly as plug flow systems, with fresh material being fed into the mixed batch which is allowed to spill out into the overflow. Processing times in digesters can vary between 12-30 days, depending on parameters such as feedstock composition, process type and temperature. Once the AD process has been brought to completion in the digester, the digestate that has been produced is removed and processed further. Compost/ digestate fibres will be matured on maturation pads for a period of time following which, a fully stabilised and mature compost product will be produced.

The biogas will generally need to be cleaned by removing sulphur and dust, and is dried to prevent corrosion. Biogas is commonly used in a CHP station to produce electricity and heat through gas engines and a steam boiler. Process air will be extracted to an air treatment unit to remove dust and particles, and any odorous compounds in the exhaust air.

Waste Transfer Facility (WTF)

In the future, large articulated trailers will be required to transfer waste to other waste treatment facilities, i.e. landfill facilities, the material recovery facility, the thermal treatment unit, etc. This will involve the transfer of residual waste at the proposed WTF on-site from Refuse Collection Vehicles (RCVs) to large articulated trailers. After weighing and logging at the weighbridge facility, the municipal solid waste will enter the facility in RCVs. The RCVs will reverse into the WTF and will then empty their loads onto a large tipping floor in the building and will exit the WTF via the same doorways they entered. The tipped waste

will then be transferred to large volume articulated trailers, which will be able to hold approximately 20 to 22 tonnes of waste. The exact method of waste transferral will emerge from the procurement process. The WTF will be under slight negative pressure and the collected air will be transferred to an air treatment system. This will mitigate the emission of any odours generate during the transferral process from the WTF.

Sludge Hub Centre (SHC)

The SHC will treat municipal sludges generated in the functioning area of Fingal County Council by the thermal drying process. The facility will take in raw and digested sludge cake from the satellite sites and treatment works. The preferred procurement route for the development is under a Design Build Operate (DBO) contract using the restricted procedure, involving a 20 year operating period. The successful tenderer will have to submit a design incorporating the best practicable technology that demonstrates minimal environmental effects during the construction and operation of the facility.

Thermal drying produces a granulated or pelletised product with a very high dry-solids content (in excess of 90%), by direct or indirect application of an external heat source to dewatered sludge cake. Drying is achieved either by convection drying when hot gas / air is blown through the sludge or by conduction drying whereby the sludge is brought into contact with a heated surface. In the case of convection drying, the gas/air flowing through the drier can be heated directly or indirectly. Thermally dried sewage sludge is commonly used in agriculture and can be used as a fuel substitute in municipal waste plants, cement and brick kilns and industrial furnaces.

The liquor generated by the treatment process is typically high strength (in particular having a high Biochemical Oxygen Demand² and ammonia content) and a treatment and disposal route is required for this waste stream. Partial treatment on-site of the liquor will be undertaken with discharge to the existing Dublin sewerage system and will have to meet daily load limits.

The treatment process offered by the DBO contractor will also be subject to operational limits e.g. for noise, odour and air quality, i.e. the process will operate without exceeding specified limits for noise and odour levels, and ground levels of atmospheric pollutants.

In addition to the four facilities describe above the will also be a main administration building, weighbridge facility and a maintenance building at the Recycling Park.

- (j) In all aspects of the management of the Kilshane Cross Recycling Park are committed to the principle of 'Best Available Techniques (BAT). The facilities at the Recycling Park will be operated in accordance with the relevant EPA BAT Guidelines and the following operation principles will apply:

- All waste handling operations will take place on hardstand areas.
- All equipment will be manufactured to the highest modern standards by a reputable manufacturer, incorporating elements such as a high degree of power efficiency and noise abatement;
- Each facility will be kept clean at all times and there will be regular checks for any evidence of litter outside all the main buildings;
- All the foul wash water generated during daily activities, i.e. daily cleansing of the hardstand areas, will be collected and either discharged following attenuation and interception or will be diverted to the foul sewer,
- The site will landscaped in a manner appropriate to the area; and
- The facility is consistent with the objectives of the Waste Management Plan for the Dublin Region and the National Hazardous Waste Management Plan;

² A measure of the organic matter present.

- (k) The main emission that will be generated from the proposed development will be to air, surface water and foul sewer. The main emissions to air will include exhausts from the odour control units in the BTF, SHC and WTF and from the sludge drying process in the SHC. If Anaerobic Digestion is chosen for the BTF and a CHP unit is used to generate electricity then there will be the exhaust from the CHP plant. The exact nature of the emissions to air will depend on the type of process chosen in the procurement process. All odour sampling and measurement will be performed in accordance with the PrEN13725:2003 Olfactometry standard.

There may be dust emissions from the C&DWRF due to the processing and sorting of the C&D material. The prevailing wind direction in the vicinity of the site is from the southwest, which means that the C&DRF is effectively upwind from the nearest residences and the potential for dust impact to these residences is negligible. The nearest properties downwind to the C&DRF are approximately 300m to the northeast. Potential for dust impact from the facility will be reduced by the elevated section of the new N2 motorway, which is located between the houses and the site of the C&DRF. It is considered that the rest of the facility operations will not be a source of significant dust.

There may be noise emissions from the plant and machinery operating at each of the facilities. However, the majority of operations will take place indoors, which will mitigate potential noise impacts from facility operations. The majority of operations at the C&DWRF will be carried out in the outdoors. Noise emissions will be generated from the crushing, sorting and stockpiling of C&D material. It is proposed to build a number of soil berms to 3.5m in height adjacent to the nearest residences to the southeast and around the processing and stockpiling areas of the C&DWRF, in order to mitigate potential noise impacts. There will also be noise emissions generated from the traffic delivering waste to the various facilities on-site and from bringing materials off-site.

Surface water runoff will be generated from rainfall on the hardstand areas and buildings on-site. A surface water drainage network will be constructed to collect the run-off. The collected run-off will be directed to two on-site attenuation systems. The attenuated water will be discharged at two locations into the St. Margaret's Stream, which runs along the western boundary of the site. Prior to discharge the water will pass through a flow control device, grit trap and oil interceptor, in order to control the discharge flow to 4litres per second per hectare and to mitigate potential impacts to the surface water body. There will be no emissions to groundwater as a result of operations at the proposed Recycling Park.

The main emission to foul sewer will be from partially treated liquor from the sludge drying process in the SHC. It is expected that the SHC will generate approximately 480m³ per day of waste liquor from the drying process. The liquor will be partially treated on-site and will then be discharged to the sewer system. Other sources of emissions to the foul sewer from operations at the Recycling Park will include wash-down water from the WTF, overflow from the wheelwash facility in the C&DWRF and domestic waste water from the various buildings on-site. If Anaerobic Digestion is chosen as process for the BTF, there will be leachate generated as part of the digestion process. If in-vessel composting is chosen, the leachate generated from the composting operations will be recycled in the process. The wastewater will be enter the proposed North Fringe Sewer via a pumping station and rising main, to be constructed on-site.

(l) **Human Beings/ Socio-economic**

There are a limited number of residences that will be impacted negatively upon by the proposed Kilshane Cross Recycling Park. There are 15No. dwellings within a 1km radius of the proposed development. The majority of those residing within a one-kilometre radius of the subject site will not have their social or travel patterns disrupted and will encounter little or no change to their existing situation. The proposed site of the Recycling Park is not

contained within or is not located adjacent to any area of high natural beauty, high quality landscape character, views or prospects, listed buildings, scenic routes, amenity use designated areas, proposed Natural Heritage Area, European sites, Special Areas of Conservation, or Special Protection Areas. The day-to-day operation of the Recycling Park, including the workings associated with all machinery and visitors to the site will be undertaken in compliance with all health and safety laws and regulations. There will only be one vehicular/pedestrian entrance to the subject lands, which shall be properly and secured against unauthorised access and trespass.

Flora & Fauna

There are no designated areas in the direct vicinity of the proposed site. There are 2 No. sites within 5km of the site, namely Santry Demesne and the Royal Canal. Neither of these sites will be impacted either directly or indirectly by the proposed development. The principal habitat occurring on the site is Dry Meadows and Grassy Verges. This habitat type is considered to be of moderate local ecological value. The majority of this habitat will be removed as part of the proposed development, resulting in a moderate permanent impact on local ecology. Several hedgerows occur along the boundaries of the proposed site. These are considered to be of moderate to high local ecological value. Fauna recorded on the proposed site are regarded as common and widespread. The proposed development will not have any significant impact on existing fauna. Hedgerows will be retained where possible. The stream on site will not be affected and all water generated on site is to be attenuate and treated prior to controlled discharge. Strict controls will be implemented to avoid pollution or sedimentation of the stream during the construction phase.

Geology

The proposed development will involve the removal of subsoils at the site to facilitate construction and to create level platforms for construction. This is a direct permanent impact but is not considered to be a significant negative impact. The operation will have no potential impacts on the soil and geology aspect of the environment. The development will result in a permanent covering of part of the site with roadways, paths and other impervious surfaces. Land to the north of the site boundary will remain as agricultural land. The removal of subsoil is an inevitable consequence of implementing the proposed development and no mitigation measures could be proposed. Any material removed off site will be done so in accordance with the Waste Management Act and Regulations. Topsoil and other soils that can be used for amenity purposes will be stockpiled on the site for use in the final landscaping of the development. There is no requirement for monitoring of the soils post construction.

Water

It is estimated that runoff would be generated from c.70% of the site that will be covered with impermeable surfaces. A drainage system will be installed to accommodate this runoff.. The generation of additional runoff is a direct, long-term effect but is not considered to be a significant negative impact. There would be reduced recharge to the ground in the area of the impermeable surfaces. However, this reduction of potential recharge to underlying groundwater resources is not considered to be a significant negative impact. As part of the water management system, it is proposed to discharge treated water runoff to the St. Margaret's Stream. This could have a potential negative impact on the water quality in the stream. However, the correct design and use of attenuation ponds, petrol interceptors and grit traps will prevent the occurrence of surface water contamination. The subject site is underlain by bedrock that is considered to have poor potential for groundwater resources, and there are no private groundwater abstractions between the subject site and the St. Margaret's Stream, which is considered to be the discharge zone for groundwater moving beneath the site.

Surface water and runoff will be diverted through a drainage system to an attenuation pond on site where settlement will occur before discharge to St. Margaret's Stream. Runoff will also be diverted through grit traps and petrol interceptors prior to discharge. A discharge

licence will be required for this activity and the runoff will meet the quality standards defined in the licence. The proposed drainage system, described in Section 3.2.13, will ensure that the release of particulate matter (mainly grit and dust) to St. Margaret's Stream will be minimal and consequently there will be no significant adverse impact on the surface water quality. During the construction phase all water to be discharged off-site will be undergo treatment prior to discharge to ensure that it does not adversely impact on the surface water environment.

Air: Dust

The main potential impact from dust at the proposed facility will be from the outdoor C&DWRF. The closest receptors are the residences adjacent to the eastern boundary of the site, along the existing N2; approximately 220m to the southeast. The prevailing wind direction in the vicinity of the site is from the southwest (Refer to Section 2.5.2.3), which means that the C&DWRF is effectively upwind from the residences and the potential for dust impact to these residences is negligible. The nearest properties downwind to the C&DWRF are approximately 300m to the northeast. Potential for dust impact from the facility will be reduced by the elevated section of the new N2 motorway, which is located between the houses and the site of the C&DWRF. It is considered that the rest of the facility operations will not be a source of significant dust. In order to mitigate dust emissions on-site, most areas of the site that traffic will be on will be paved. Hardstand and paved areas will be sprayed with water when necessary, to avoid dust generation. A 3.5m high soil berm will be constructed around the material processing and stockpiling area of the C&DWRF, in order to mitigate the potential impact of dust generation at the facility.

Air: Odours

As the proposed Recycling Park is a Design/Build/Operate (DBO) project, quantifying odour emissions from the site is difficult. For the BFF, raw materials for composting can be odorous due to the development of anaerobic zones within the input material. The rate of release of odorous compounds into the atmosphere at composting operations is influenced by:

- Long residence time of accepted input product in containers and on-site;
- Temperature of accepted raw materials (increased temperature causes increased anaerobic conditions and volatilisation of odorous compounds);
- The concentration of odorous compounds in the solid phase exposed to air and exposed surface area;
- Processes that generate turbulence like mixing and screening processes;
- Excess moisture;
- Incorrect Carbon: Nitrogen ratio;
- Maintenance of oxygen rich conditions within the composting operations;
- Tipping, screening and shredding of raw materials;
- Non-homogenous aeration and mixing;
- Inappropriate storage of finished material;

The rate of release of odorous compounds into the atmosphere at Anaerobic Digestion operations is influenced by:

- Long residence time of accepted input product in containers and on-site;
- Temperature of accepted raw materials (increased temperature causes increased anaerobic conditions and volatilisation of odorous compounds);
- The concentration of odorous compounds in the solid phase exposed to air and exposed surface area;
- Processes that generate turbulence like mixing and screening processes;
- Positive sour gas release from the pressure release manifolds;
- Gas leakage due to start/stop operation of gas compression engines and flare.

Odours from WTS operations may arise due to:

- Waste tipping;

- Waste movement through front-end loader operation. Sealed refuse sacks are broken easily and emit odourous compounds and trapped gases;
- Waste movement through use of grab; the waste is removed and tipped into the trailer using a grab. This movement allows for the stripping and volatilisation of odourous compounds from the waste matrix. Waste refuse sacks are squeezed and odourous gases are released;
- Waste storage within the building has the potential to contaminate any air in contact with the waste. Also anaerobic conditions proliferate and the waste "cooks";
- Other minor sources include waste trucks, waste storage trucks, grease traps, oil separator and exposed manholes around the yard.
- All dirty surfaces especially in warmer summer months radiate odour;
- Dust deposits within the building radiate odour and increase background odours within the building;

Odours from SHC operations may arise due to:

- Delivery of sludge to site in skips may lead to the fugitive emissions of odours during emptying,
- Pumping of sludge from tankers can release odours from the storage tank and pressure release manifold on tanker. Negative ventilation will be provided on the sludge storage tank and all odourous air treated in and Odour Control Unit (OCU),
- Depending on the drying technology, incomplete combustion of odours within the combustion chamber of the sludge drying plant can be emitted untreated,
- Cyclic loading on the OCU may allow for the release of odours from the sludge drying OCU. This will be considered during the design of the OCU,
- Leaks around fans can lead to the emissions of odours from the sludge drying equipment.
- Particulate removal from the odour stream is essential for efficient operation of the sludge drying OCU,
- Open sludge storage areas may cause odours. All sludge storage will be enclosed.
- This list is non-exhaustive.

A worst-case odour emission scenario was modelled for the Recycling Park using an atmospheric dispersion model, worst-case meteorological year and worst-case odour emission data to predict any potential odour impact in the vicinity of the proposed Kilshane Cross Recycling Park. It was concluded that during operation of the Kilshane Cross Recycling Park, with considered abatement protocols implemented, no odour impact will be registered by residents living in the vicinity of the facility. During DBO procurement, odour emission limit values will be used for specification. Maintaining good housekeeping practices and implementing an odour management plan for the operators of the Kilshane Cross Recycling Park will mitigate potential for odour impact.

Air: Pollutants

The operation of the proposed processes at the Recycling Park will lead to emissions of air pollutants and by using atmospheric dispersion modelling, the potential impact of these pollutants were assessed and compared to relevant ambient air quality objectives and limits. Background air quality data was obtained from on-site assessment and review of the available baseline air quality data generated by the Irish EPA. The main compounds assessed include oxides of Nitrogen (NO_x), Carbon Monoxide (CO), Sulphur Dioxide (SO₂), Total Organic Carbon (TOC), particulates (PM), Hydrogen Fluoride, Hydrogen Chloride and Formaldehyde. The results of the modelling showed no exceedences on air quality impacts for the modelled parameters.

Noise

In terms of noise impact, the proposed development will generate potential noise impacts from the construction of the all the facilities, the operation of the completed facilities and the

subsequent road traffic flow associated with operation of the completed facilities. Construction activities on a large site have the potential to generate considerable levels of noise. Noise emissions are associated both with the movement of construction traffic to and from the site, and the operation of equipment on the site e.g. excavators, lifting equipment, dumping trucks ready-mix trucks etc. The noise level predictions from the increase in road traffic flow attributable to construction will be negligible along the N2 at less than 0.2 dB(A). For the operation of the completed facilities, the potential for noise generation will come from the plant, vehicles and equipment to be utilised at the facilities. The predicted noise levels assume that all mobile and fixed plant is operational together and that all these main noise sources are housed inside a building structure / envelope giving an overall sound transmission loss of 15 dB(A). The maximum predicted noise impact at the closest noise receptor, i.e. the residences adjacent to the southeast boundary of the site, is 46.2 dB(A).

The principal road traffic noise will be that associated with delivery of materials to and from the recycling facility, staff movements, and visitors. Ground vibration can be generated from construction traffic, light vehicles on the roadway and by construction activity. It is predicted that when the recycling facility is completed, the traffic flow on the N2 will be substantially reduced by the opening of the new N2 motorway. The traffic flow increase on the existing N2 in year 2006 (with new N2 motorway open) is predicted at less than 10% of the projected 2004 N2 flow. This increase in noise levels will be insignificant at less than 0.8 dB(A) along the N2. Mitigation measures for noise impact include the construction of a 3.5m topsoil berm along the southeast boundary of the site in line with nearest residences, and to the around the processing and stockpiling areas of the C&DWRF, and the structures that will house all the main noise sources will be designed to give an overall sound transmission loss of 15 dB(A).

Landscape & Visuals

Landscape and visual impacts can arise from the proposed development in a number of ways, including the removal of landscape features (temporary or permanent), the construction impacts (short term) and operational impacts, including lighting (medium or long term). Construction impacts are likely to have significant impacts, but by their nature will be short-lived. Construction activities will be largely screened from the south and southwest of the site by the temporary quarry workings and presence of intervening vegetation. Views from the north and northwest will be partially screened by the construction of the new N2 road and intervening vegetation.

The effect of the proposals would be to increase the footprint area and size of industrial type facilities within the Kilshane area. The nature of the development is consistent with other nearby land uses, as the presence of the quarry, power plant and associated structures; power lines and pylons already heavily influence and degrade the landscape character of the area immediately adjacent to the proposed development. The taller structures will be visible but would not significantly change views as tall existing industrial buildings to the southwest of the site are already prominent in these views. Appropriate finishes will lessen the impact of the larger buildings and structures within the landscape. The users of the existing N2 road will receive a slightly negative impact from the development following mitigation. The views from the new N2 will be greater than from the existing N2. This is because the new road will be elevated over the existing N2 in the northeast corner of the site. However as the tree and shrub planting on the embankments of the new N2 road matures, the views of the Recycling Park will be lessened.

Properties located immediately by the southeastern end of the development and which line the existing N2 road will experience the most significant effects of the development; due to their close proximity. The proposed landscape bunding and planting along the southeast boundary of the site will screen these properties from ground floor level and the growth of shrub and tree material will also further lessen the visual impact over time. Mitigation measure of visual impact of the facility include the retention of existing hedgerows and trees

surrounding the edges of the site for screening, supplementary planting of local provenance plant material at the site's perimeter to reinforce the existing landscape structure

Cultural Heritage

The following are the potential impacts of the proposed development on the cultural assets and heritage:

- Archaeological deposits have been located in the area defined as a possible motte and bailey (site of) these consist of ditches, burnt area, gullies, possible pits and postholes.
- Archaeological deposits in the form of a spread of heat affected and shattered stone have been located in the area flagged as a geophysical anomaly.
- Archaeological deposits could potentially be located within the areas undisturbed by testing.

The following mitigation measures are recommended:

- No development will proceed in the vicinity of the features associated with the possible motte site
- A buffer zone will be created around the possible motte and bailey site, which measures 10m to the south and east and 20m to the north and west.
- It is recommended that if the archaeological deposits identified as a spread of heat affected and shattered stone to the north west of the site and an area of burning cannot be avoided by the proposed development, then a full record of the site will be created through archaeological resolution under licence/ direction of The Department of Environment, Heritage and Local Government.
- It is recommended that full monitoring of any groundworks outside of the recommended buffer zone area be carried out by a suitably qualified archaeologist under licence/ direction of The Department of Environment, Heritage and Local Government.

Infrastructure & Transport

It is estimated that the total site, when fully developed, will generate some 450No. vehicle movements, comprising 310No. HCV movements and 140No. car and light goods movements during the normal working day. During construction, it is estimated that the works will generate an average of 10No. HCV trips, with peaks of 20 HCV trips per day being generated during certain operations, such as the pouring of the concrete etc. It is estimated that the development will also generate approximately 20No. other car and light vehicle trips per day, this will include service vans, site visitors, journeys to work etc.

The traffic flow at the location of the proposed exit on the N2 is very high with a predicted AADT of over 30,000 in 2004. At peak times, the level of service on this section of road would be E³. There are proposals to provide a new motorway link between the M50 and the N2 north of Ashbourne. This road is at an advanced stage of construction and is expected to open in 2006. The level of service experienced on the section of the old N2 in the opening year of the motorway at the proposed site, including the proposed facility in full operation, will be at least B⁷. The construction phase of the waste facility project will, at worst, correspond with the final phase of the motorway construction. The overall increase in existing traffic in volumetric terms for the construction phase will be less than 0.5% of existing traffic level. When the new N2 Road Scheme is in operation, the main impact on traffic on the existing N2 will be from traffic entering and leaving the facility. The mitigation measures for the impact of traffic from the proposed develop include a single access point to the site, the single access is located towards the centre of the total site in order to maximise the entrance sightlines in both directions, the fence line will be set back to facilitate the provision of sightlines at the entrance to comply with the requirements of NRA Design Manual for Roads and Bridges and it is proposed to incorporate into the design a right

³ National Roads Needs Study, National Roads Authority 1998. Level of service rating E refers to a single carriageway with an average speed of 72kph. Level of service rating B refers to a single carriageway with an average speed of 88kph.

turning lane for traffic coming from the Kilshane Cross direction together with a left slip lane for traffic entering the site from the south (M50).

- (m) All environmental monitoring will be carried out under the conditions of the waste licence for the facility issued by the EPA. Emission Limit Values (ELV) will be set by the EPA for many of the parameters to be monitored. Exceeding these values will be judged by the EPA to be a non-compliance with the Waste Licence. It is proposed to monitor/sample dust, surface water ecology, groundwater and surface water quality, noise and fowl sewer discharge. Results of the various monitoring programmes will be detailed in the Annual Environmental Report for the site. The monitoring programme may be changed by the conditions of the Waste Licence or due to the final operations to be carried out at each facility in the Recycling Park.
- (n) There may be some residual wastes generated from the processes in BTF and in the C&DWRF, depending on the final process used. Any residual waste generated will be sent to the WTF for transfer off-site. The residual waste will be weighted at the main weighbridge facility before entering the transfer facility.
- (o) The WTF will transport up to 65,000tonnes of municipal solid waste collected from the Fingal County Council domestic refuse collection routes. The Fingal County Council refuse collection vehicles (RCVs) will bring the waste to the facility for transfer to large ejector trailers. The filled trailers will then bring the bulked-up waste management to facilities in region. There may also be some residual wastes generated from the processes in BTF and in the C&DWRF, depending on the final process used.

There are potential synergies available at the proposed Recycling Park, particularly the potential to transport the dried sludge product via the proposed WTS to a Waste to Energy plant in the future. This option will be considered along with other options for the end use of the dried sludge product, i.e. re-use in agriculture or re-use as a fuel in manufacturing.

- (p) Each facility in the Recycling Park will develop policies in relation to accident prevention and emergency response, depending on the treatment process to be used. Details of these policies will have to be agreed with the Agency prior to construction and operation, particularly in relation to the BTF and the SHC. All facilities will have to comply with the latest Health & Safety Regulations.

In terms of the C&DWRF and the WTF, there are main contingencies allowed for include operational failure of plant and equipment, breakdown of transfer/transport system, industrial action by operational staff; and fire in the facility. An Environmental Liabilities Risk Assessment for each facility at the Recycling Park will be drafted and agreed with the Agency.

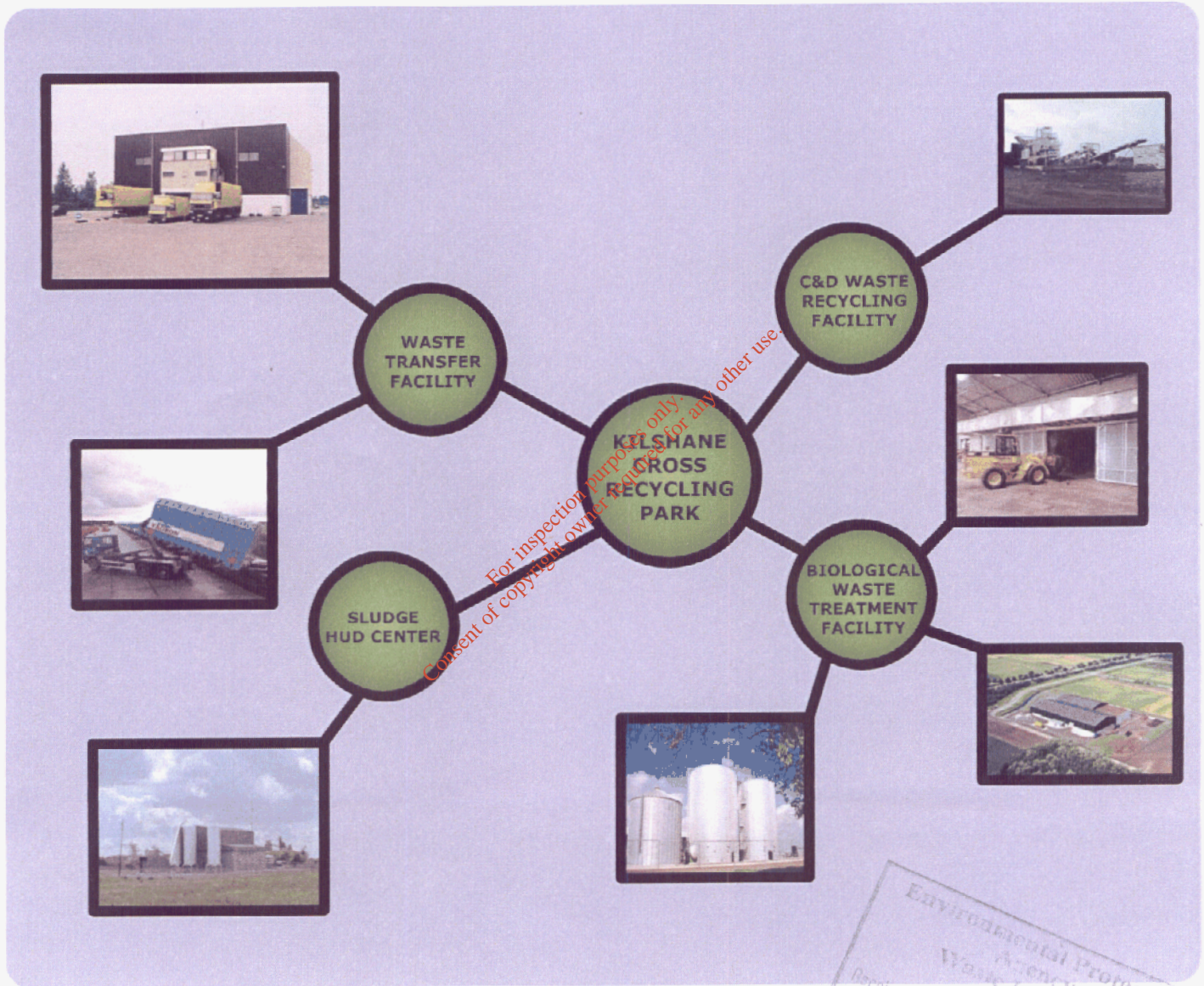
- (q) It is the intention that the facilities in the Kilshane Cross Recycling Park will continue in operation for the foreseeable future. An Environmental Liabilities Risk Assessment will be carried out and a Decommissioning Plan written prior to commencement of operation at the site. Prior to commencement of operation, an Aftercare Plan will be developed.
- (r)-(t) These paragraphs are not relevant to the proposed development.



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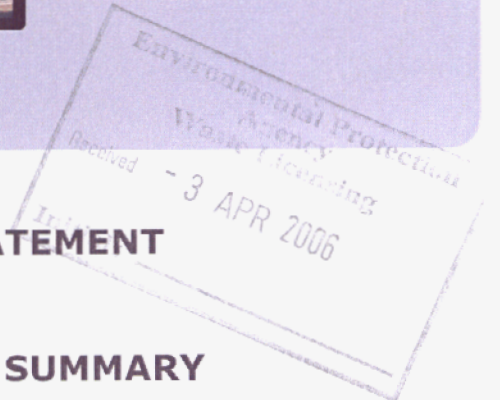
KILSHANE CROSS RECYCLING PARK



ENVIRONMENTAL IMPACT STATEMENT


VOLUME I: EIS NON TECHNICAL SUMMARY

REVISED
MARCH 2006



Document Amendment Record

Client:	Fingal County Council
Project:	Kilshane Cross Recycling Park
Title:	EIS Non-Technical Summary

Project Number: 1234			Document Ref: Kilshane Cross EIS		
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1. INTRODUCTION

1.1 Proposed Development

Fingal County Council proposes to develop a Waste Recycling Park at a site in the townland of Newtown, Kilshane Cross, Dublin 15. Please refer to the Site Location Map, Figure 1.1. The Recycling Park will consist the following waste management facilities:

- A **Construction and Demolition Waste Recovery Facility** processing 75,000 tonnes per annum (tpa);
- A **Biological Waste Treatment Facility** treating 45,000tpa of segregated domestic and commercial organic waste;
- A **Waste Transfer Facility** processing 65,000tpa of municipal solid waste; and
- A **Sludge Hub Centre** treating 26,511tpa of de-watered sludge cake from wastewater treatment facilities in County Fingal.

Fingal County Council is applying to the Environmental Protection Agency (EPA) for a Waste Licence and to An Bord Pleanála for Planning Approval. Fingal County Council owns the site of the proposed Recycling Park. The facilities will be developed using the Public Private Partnership (PPP) process, with each facility being developed and operated by different private contractors. The whole recycling park will be covered by a single planning approval and waste licence, with Fingal County Council being the licence and permission holders.

1.2 Need for Environmental Impact Statement (EIS)

The consequences of any major engineering project are required to be presented in the form of an Environmental Impact Statement (EIS). The EIS as prepared contains a description of the existing environment, information on the scale and nature of the proposed development, an impact assessment of the proposed development and mitigation measures to reduce the impact on the receiving environment. This document provides a non-technical summary of the overall EIS describing the existing environment, the proposed development and potential impacts and mitigation measures.

2. Background

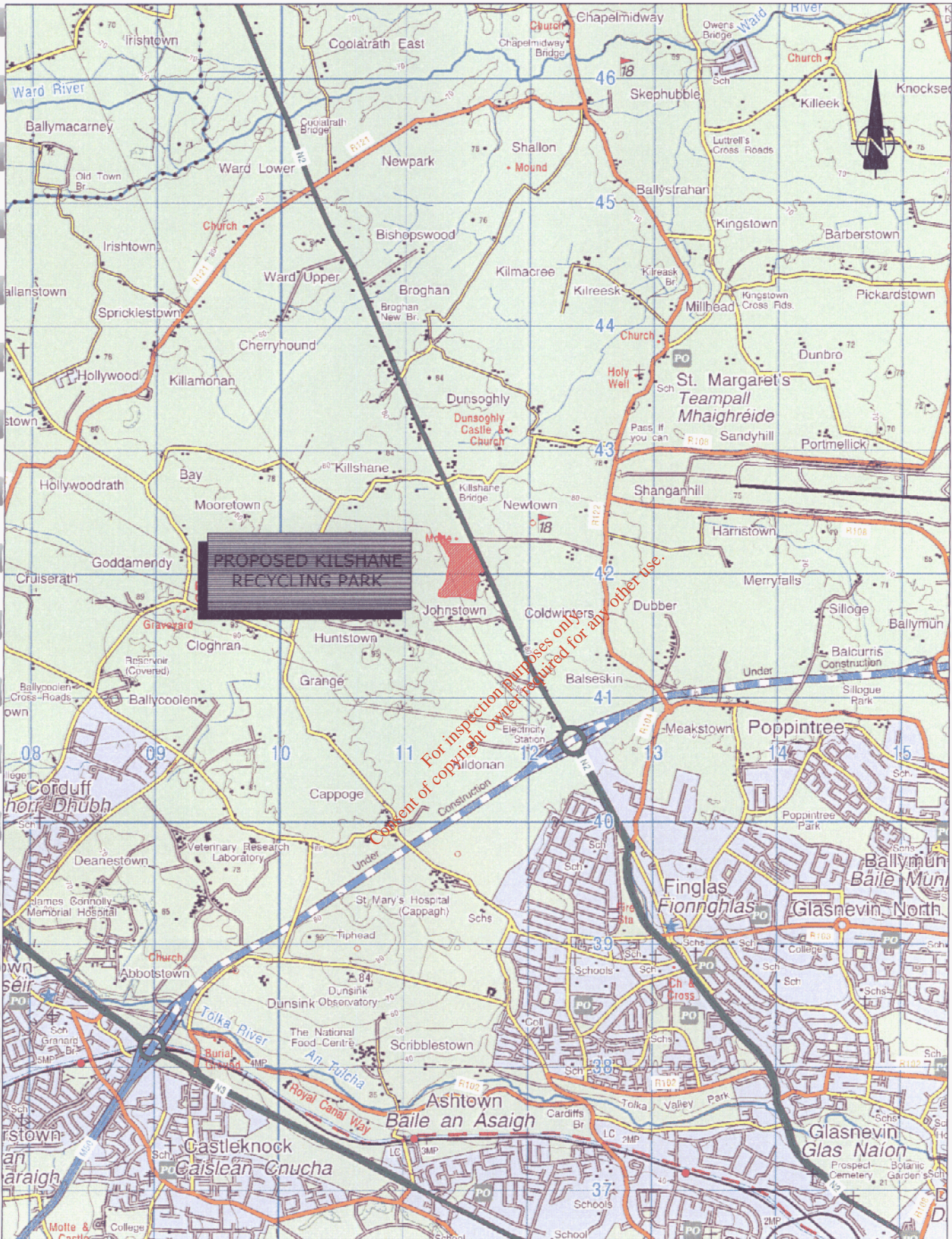
2.1 Site Location

The Kilshane Cross site is found approximately 1.5km north of the N2/M50 interchange in the townland of Newtown, which is located within the local authority administration area of Fingal. The site is presently undeveloped. The N2: Finglas to Ashbourne Road Scheme is currently being constructed to the east of the site. The Huntstown Quarry is located to the south and west of the proposed development site. The Huntstown Power Station is located to the south of the site, adjacent to the Huntstown Quarry and there is also an ESB transmission station located further to the south, adjacent to the M50. Dublin airport is located approximately 5km to the east of the site. There are a number of businesses to the east and north along the N2 in the vicinity of the site. The Coldwinters Golf Club is located to the east of the site. The golf course is currently closed while the N2: Finglas to Ashbourne Road Scheme is being constructed.

2.2 Site Suitability

The Kilshane Cross site is the most appropriate location of each of the proposed facilities. Grouping the facilities in one site allows for economies of scale in relation to transportation, planning, licensing and land costs. The site's location on the N2 provides easy access to the M50, other primary road routes and all parts of the Fingal County Council functional area, as well as the other Dublin Local Authority Areas. The Kilshane Cross site is close to the centroid of waste generation of both household organic waste for the North Dublin Region and of household residual waste for Fingal County. There are a number of existing large-scale developments in the vicinity of the site and the new N2; Finglas to Ashbourne Road Scheme is currently under construction adjacent to the site.

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PROPOSED KILSHANE RECYCLING PARK

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Client FINGAL COUNTY COUNCIL	Drawing Title LOCATION MAP	Drawn by Dermot Burke	Checked by Sean Finlay	Date September 05
Project KILSHANE CROSS RECYCLING PARK	Scale 1/40,000	 <p>BLOCK 100 BLANCHARDSTOWN CORPORATE PARK DUBLIN 15 IRELAND TEL: 01 803401 FAX: 01 803410 email: ed@tes.ie</p>		
Drawing No. FIGURE 1.1				

2.3 Limitation of the EIS Process

The detailed engineering specifications of the different elements of the Recycling Park are not fully known. This is due to the fact that the proposed facility will be developed using the Public Private Partnership (PPP) process. The exact nature of the contractual arrangements has also to be finalised. The PPP process will require the bidding contractors to submit their preferred designs for consideration. The EIS has considered the worst-case scenario, and/or has specified design limits on emissions necessary to meet emission limits or designated standards. The specific environmental limits specified by the EPA will be incorporated into the Contract Documents of the final contract in terms of design envelopes. These design envelopes will clearly define the range of emissions that will be permitted, and each submitted proposal will be examined to ensure strict adherence with the appropriate design envelopes.

2.4 Consultation

A comprehensive consultation process has been followed to date in respect of the proposed facility. The consultation process consisted of consultation with the public, competent bodies, statutory bodies and other interested parties from an early stage of the compilation of the EIS. The primary objectives of the consultation process followed were to aid the scoping of the EIS and to fully brief all the interested parties of Fingal County Council's proposal and to ascertain their observations.

3. Existing Environment

3.1 Human Beings/ Socio-economic

The majority of the area surrounding the proposed development site is designated as rural and green belt, characterised by scattered individual dwellings and development clusters, often along main roads; a mix of traditional farm based dwellings; small newer houses; and a few larger dwellings set in grounds. There are a limited number of residences likely to be directly or indirectly impacted upon by the proposed development. There are 15 dwellings within a 1 km radius of the site of the proposed development. The majority of the houses are located to the north and east of the site along the N2. The proposed development site is not used as a tourist amenity and is currently fallow agricultural land. The proposed site is not contained within or is not located adjacent to any area of high natural beauty, high quality landscape character, views or prospects, listed buildings, scenic routes, amenity use designated areas, proposed Natural Heritage Area, European sites, Special Areas of Conservation, or Special Protection Areas. In addition, it does not interfere in any manner with the cultural heritage of the area. This proposed enterprise will provide employment for at least 80 people directly over its lifespan as well as further indirect employment for service personnel.

3.2 Flora & Fauna

The site is composed of a single large field of semi-natural grassland, surrounded by hedgerow on the western and southern boundaries. It is partly bounded by hedgerow to the east. The remainder of the eastern boundary comprises of an earthen embankment topped with wire and post fencing. The western boundary also coincides with a small stream. No physical boundary delineates the proposed site to the north. There are two designated nature conservation areas located within 5km of the site, namely, Santry Demesne and the Royal Canal. The habitats on site are dominated by a low to moderate diversity grassland classified as Dry Meadows and Grassy Verges. A number of hedgerows form the boundaries of the site. Furthermore, a small stream flows along the western boundary of the site. These habitats are considered of moderate to high local ecological value. Fauna noted on site are considered typical of agricultural habitats and are common and widespread.

3.3 Geology

The subject site is mostly underlain by soil described as a deep well drained mineral soil derived from mainly basic parent materials. The soils in this category include Grey Brown Podzolics and Brown Earths. The results of site investigations, i.e. trial pits and boreholes, revealed the subsoils were a mixture of silt and clay – rich tills with a variable content of sand, gravels, cobbles and boulders. This geology is consistent with the general subsoil reported by the Geological Survey of Ireland for this area of County Dublin. The bedrock encountered during the site investigations varied between firm dark grey, limestone and weathered orange/yellow bedrock, with no evidence of fresh bedrock. There are three bedrock formations underlying the proposed site. The formations are classified by the Geological Survey of Ireland (GSI) as the Malahide Formation, the Waulsortian Limestone, and the Tober Colleen Formation. An aquifer classification by the GSI describes the Waulsortian Limestone and the Malahide Formation as Locally Important Aquifers, which are moderately productive only in localised zones. The Tober Colleen Formation is classified as a Poor Aquifer, which is generally unproductive except in localised zones.

3.4 Water

The proposed site is within the River Ward catchment. A number of tributary streams contribute to the overall flow in the River Ward along its course. A tributary stream of the River Ward, St. Margaret's Stream, flows from south to north and forms the western boundary of the site for approximately 470m. This stream feeds into the River Ward, which is located approximately 4.5 km to the northeast of the site. The EPA Water Quality Database, as presented on the EPA website, indicates that the water quality in the River Ward is Moderately Polluted.

St. Margaret's Stream was sampled at 2 No. locations as part of the baseline assessment of water quality. The analytical results concur with the EPA water quality ratings for the River Ward and indicate that in general the water quality in St. Margaret's Stream is moderately polluted. To assess the hydraulic characteristics of the site, 3 No. boreholes were drilled. The water levels in the boreholes indicate that the groundwater flow direction is from north to south, which is the opposite of the surface water flow direction. The difference between the groundwater flow direction and the surface water flow direction is considered to be due to dewatering within Huntstown Quarry, which is located immediately to the south and west of the subject site. The reported concentrations for all parameters were within the corresponding Maximum Admissible Concentrations as quoted in the Drinking Water Regulations with the exception of the detected

values for ammoniacal nitrogen, manganese, nitrite and iron. The Geological Survey of Ireland has not, as yet, classified the groundwater vulnerability of the area of the proposed development. Given the nature of the subsoil revealed at the subject site and the depth to bedrock proven in the boreholes drilled at the site, a low vulnerability rating is considered appropriate for the entire site.

3.5 Climate

There is no meteorological data specific to the proposed site. In order to give reliable climatic data on a particular area a weather station should be in operation for at least 30 years. The closest rainfall gauging station is located at Dublin Airport, which is approximately 5km east of the site. The 30-year annual average rainfall for the area is 733mm. Information from Dublin Airport states that the prevailing winds are from the southwest, with lesser wind flows from the south and west.

3.6 Air: Dust

Dust deposition levels at the site were monitored on a number of occasions, covering different seasons. The results of testing showed that dust deposition levels were below the guideline limit of 350 mg/m²/day.

3.7 Air: Air Quality

A baseline monitoring survey was carried out at the site of the proposed development using a range of air monitoring techniques. The dominant source of Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂) and particulates in the area appears to be from motor vehicle exhausts, the burners/boiler heating local residences and the close by industrial processes. The measured concentrations at all monitoring locations are within the Irish and EU Ambient Air Standards.

Hydrogen Sulphide (H₂S) is used as an indicator gas for the assessment of significant odour nuisance in the vicinity of wastewater treatment plants and composting facilities. The World Health Organization (WHO) recommends that in order to avoid substantial complaints about odour annoyance among the exposed population, hydrogen sulphide concentrations should not be

allowed to exceed 0.005 ppm (5 ppb; $7 \mu\text{g m}^{-3}$), with a 30-minute averaging time. H_2S concentration levels at the site did not exceed 4ppb. Bioaerosols were also monitored at the existing site and it was established that minimal Bioaerosol impact exists on the current site.

3.8 Noise & Vibration

Typical noise sources in the vicinity of the site include the emissions from road traffic flow on the National Primary Route (N2) to the east, the passage of aircraft overhead at low altitude running east to west, noise emissions from the Viridian Power Plant to the south and noise emissions from the Roadstone quarry to the west and south of the site.

3.9 Landscape

The general landscape surrounding Kilshane Cross is predominantly low lying rural agricultural land. This agricultural land is comprised of both improved and unimproved pasture and arable. The fields are broadly rectangular and medium to large in size and open in character; field boundaries are predominantly hedgerows and earth banks. The site falls into the Landscape Character Area, Low Lying in the Landscape Character Assessment of the Development Plan for 2005 to 2011; it is described as, "A mixture of pasture and arable farming on level land with few views or prospects. The landscape character is increasingly being influenced by urban fringe development of Dublin. Residential settlement in the area is typical of rural areas and occurs at regular intervals along the local road network, mostly in small clusters."

3.10 Cultural Heritage

There is an archaeological monument (Recorded Monument 14:13) recorded as a "motte and bailey (possible)" in the Sites and Monuments Record (RMP) for County Dublin adjacent to the site of the proposed development. No surface trace of the site survives above ground today, however the site is visible as a soil mark on aerial photographs taken by the Fairey Survey of Ireland 1971 and the Ordnance Survey colour aerial photography. The area around the motte and bailey (site of) has been the subject of numerous archaeological testing and monitoring works, however no feature or finds of any archaeological nature were located.

3.11 Infrastructure & Transport

The proposed site is located on land, owned by Fingal County Council, immediately abutting the N2 National Primary Road, on the south side of the N2, approximately 1.5km north of the M50/N2 interchange. Access to the lands is directly from the N2. Figure No. 1.1 shows the location of the site in relation to the surrounding road network. The site is easily accessible from the R125, R121, Kilshane Cross/Airport Road as well as the M50. The N2: Finglas to Ashbourne Road Scheme is being constructed adjacent to the proposed site, from the existing junction of the N2/M50 to a point some 3km north of Ashbourne in County Meath. The N2 between the M50 and Kilshane Cross carries very substantial volumes of traffic. Recent traffic data from the National Roads Authority (NRA) for the counter on the N2 was 19,541 vehicles per day, with a HCV¹ content of 14%.

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¹ HCVs are taken to include trucks, artics, buses, agricultural vehicles and miscellaneous goods vehicles (based on the definition given by the NRA in 'National Roads and Traffic Flow 2002')

4. PROPOSED DEVELOPMENT

It is proposed to develop four separate waste management facilities at the Kilshane Cross Recycling Park site, i.e. a Construction & Demolition Waste Recovery Facility (C&DWRF), a Biological Treatment Facility (BTF), a Waste Transfer Facility (WTF) and a Sludge Hub Centre (SHC). Please refer to the proposed Site Layout Map, Figure 4.1. The facilities will be developed using the Public Private Partnership (PPP) process, with each facility being developed and operated by different private contractors. The whole Recycling Park will be covered by a single planning approval and waste licence, with Fingal County Council being the licence and permission holders.

The exact nature of the treatment processes or technologies will emerge from the procurement process and thus have yet to be agreed. The following is a brief description of the processes to be carried out at each facility.

4.1 Construction & Demolition Waste Recovery Facility (C&DWRF)

The C&DWRF will mainly deal with the recovery of construction and demolition (C&D) waste from industrial, commercial and household sources. The materials to be treated will mainly consist of soil, rubble, old road material, reinforced concrete, bricks, blocks, etc. This material will be brought on-site in bulk haulage vehicles and large skips, and will be the result of large development and infrastructural projects. The facility will produce a variety of aggregate types depending on the final market for the material. This material will be stockpiled in a designated area of the site and it will be sold as an aggregate product.

All waste upon arrival at site will be weighed at the facility weighbridge and will be directed to the outdoor reception/ processing area. The unprocessed C&D waste will be fed into a hopper by a grab crane or loading shovel depending on the type of material. From the hopper the material will be fed into a mobile crusher and the crushed material will go by conveyor belt to a screening rig. Before the screens, the conveyor passes a magnet, which extracts steel and metal (e.g. reinforcing bars) from the crushed material. The screens sort the crushed material into different aggregate sizes and put them into stockpiles depending on size. The grade of material recovered will be largely dependent on available market outlets and the processing equipment will have the flexibility to produce a number of grades.

The aggregates produced will be tested for their suitability as a civil engineering material. The materials produced at the facility will have to match the properties of virgin building materials in order to compete in the market.

4.2 Biological Treatment Facility (BTF)

The BTF will utilise either aerobic in-vessel composting or anaerobic digestion (AD) to treat biowaste collected in the Dublin Region. Other waste streams may also feed into the facility and include separately collected kitchen waste from restaurants, hotels and other commercial sectors. The exact process to be used in the BTF will emerge from the procurement process. The operations in the Biological Treatment Facility will be in accordance with Department of Agriculture and Food guidelines for the processing of Animal By-Products (ABP).

In-vessel Composting

The composting facility will be fully enclosed in a large building and will comprise the following elements:

- Waste reception area;
- Pre-treatment area;
- In-vessel composting units;
- Maturation pads;
- Odour abatement systems;
- Process control and monitoring equipment; and
- Post treatment and bagging area.

The processing steps of the in-vessel composting systems will include waste acceptance and pre-treatment of incoming waste, biological processing, maturation, post treatment, and process control and monitoring. All waste to be accepted at the facility will be inspected and deposited in the enclosed waste reception area, where it will undergo pre-treatment. Removal of contaminants from the feedstock will assist in producing high quality compost. Once the material has undergone the relevant pre-treatment processes the waste will then be placed in the in-vessel units and the in-vessel composting process will begin.


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- LEGEND:
- EXISTING BUILDING
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 - PROPOSED FENCING, WALL & PAINTING REMAINANCE SPACE
 - EXISTING FENCING, WALL & PAINTING REMAINANCE SPACE
 - PROPOSED FENCING, WALL & PAINTING REMAINANCE SPACE

SITE ACTIVITY ZONE BOUNDARY

Extract from O/S 8, Inch-Sizes Sheet No. 1:1 (Scale 1:1000) showing the location of the site within the O/S 8, Inch-Sizes Sheet No. 1:1 (Scale 1:1000) (© Ordnance Survey, Under Government of Ireland)

- NOTES:
1. Figured dimensions only to be taken from this drawing.
 2. All drawings to be checked by the Contractor on site.
 3. Repairs to be indicated in any descriptions before any work commences.
 4. All work shall be done in accordance with the Contract Documents.




Fingal County Council
Cemeteries, Carriage House, Gal

Project: **MELSHAM CROSS RECYCLING PARK**

Drawing Title: **PROPOSED SITE LAYOUT PLAN**

Scale: 1:300 (A3)	Checked By: [Signature]	Date: September 2005
Drawn By: Grahame	DISBURSE IN 12 MONTHS (See Notes)	



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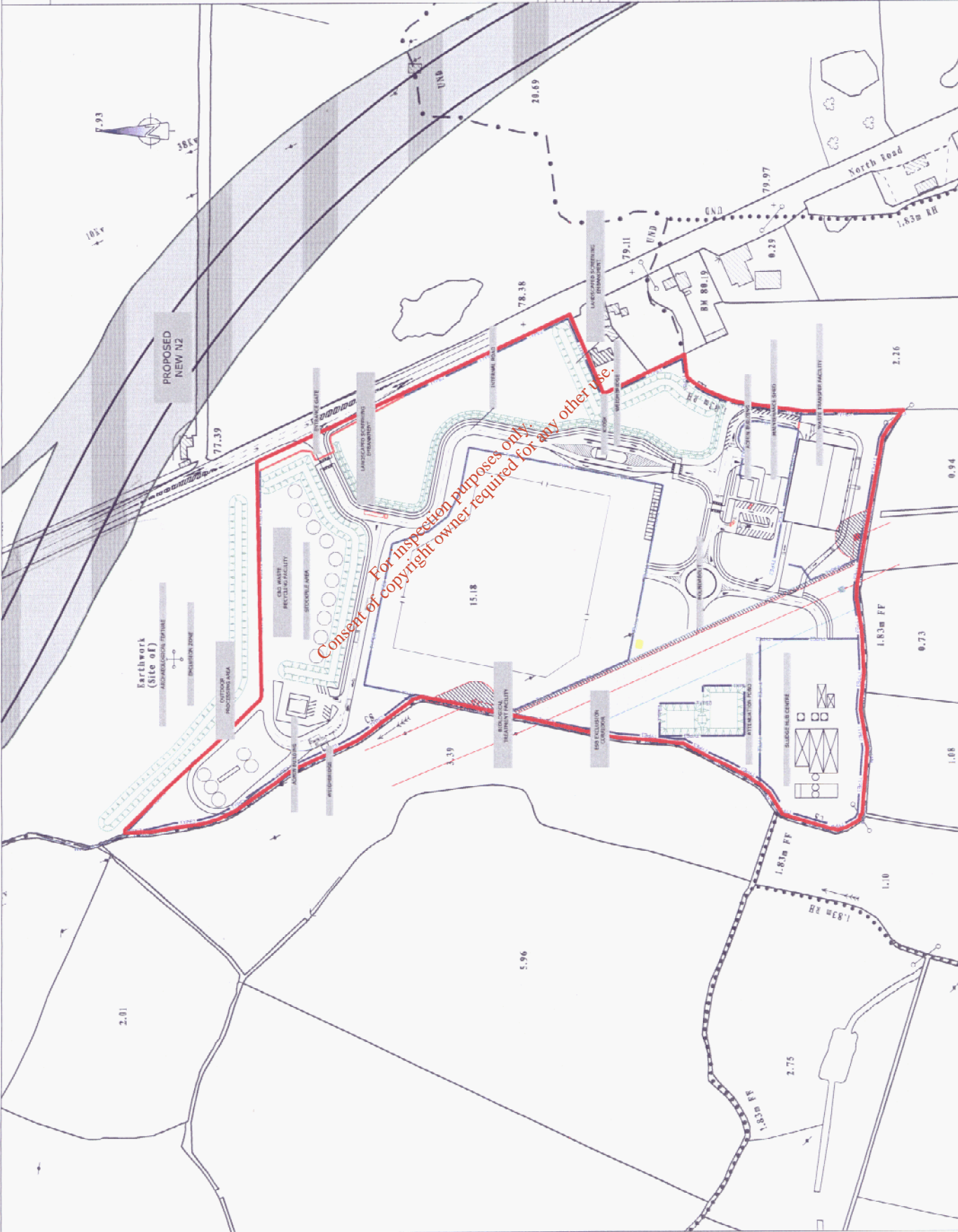


Figure 4.1

In-vessel systems supply optimum conditions for microbes to live and breakdown the waste by providing optimum temperature, aeration and moisture in an insulated system. Maintaining high temperatures (60-65°) within the vessel will ensure that a sanitised product will be produced. The principle of in-vessel composting systems is to maintain these optimum conditions for as long as required. Residence times in in-vessel systems can vary from a few hours to approximately 2 weeks.

Maturation usually takes place by placing piles of the treated material on aerated floors, which continue to supply air to the material. Maturation periods usually last for 6-8 weeks depending on the quality of the product required. Additional screening of the finished product may also be required to remove further contaminants from the product. In-vessel composting processes are typically fully automated, which allow site operators to continuously monitor key process parameters such as pH, temperature, moisture content, aeration, etc. Monitoring and control of the above parameters will ensure that the process runs efficiently and that there are no significant impacts on the environment.

Anaerobic Digestion

Anaerobic Digestion (AD) is a biological process where organic waste can be broken down by micro-organisms in the relative absence of oxygen to produce a mixture of biogas, solid digestate and nutrient rich wastewater. Biogas consists primarily of a mixture of Methane (40-70%) and Carbon Dioxide (30-60%), with small quantities of hydrogen, hydrogen sulphide, and ammonia present. Biogas is commonly used in a Combined Heat and Power (CHP) station to produce electricity and heat through a gas engine and steam boiler. Energy produced can be used to fuel the AD plant and the excess can be exported to the national grid or can possibly be used to provide power to the other facilities in the Recycling Park.

- The main elements of an AD processing facility comprise:
- Waste reception building;
- Pre-treatment area;
- Pasteurisation plant – to meet Animal By-Products Regulations
- Gas handling equipment such as pipes, valves, flares, gas cleaning and storage equipment;
- Gas engines, turbines and electricity generators;
- Steam generators - to provide heat to the digester;

- Digestate dewatering equipment such as presses, centrifuges, effluent storage;
- Maturation pads;
- Odour abatement systems;
- Process control and monitoring equipment; and
- Pre and post-treatment equipment such as screens, magnetic and eddy current separators.

All waste to be accepted at the facility will be inspected and deposited at the enclosed waste reception building where it will undergo pre-treatment. Once the material has undergone the relevant pre-treatment processes the waste will then be placed in the digester and the AD process will begin. Digesters are usually constructed of steel and/or reinforced concrete. Reactors may be vertical or horizontal depending on the technology. The reactor volume will depend on the volume of waste throughput and the residence time.

Centralised anaerobic digestion plants (CAD plants) can be mesophilic (about 35°C) or thermophilic (about 55°C). The digesters operate mainly as plug flow systems, with fresh material being fed into the mixed batch which is allowed to spill out into the overflow. Processing times in digesters can vary between 12-30 days, depending on parameters such as feedstock composition, process type and temperature. Once the AD process has been brought to completion in the digester, the digestate that has been produced is removed and processed further. Compost/digestate fibres will be matured on maturation pads for a period of time following which, a fully stabilised and mature compost product will be produced.

The biogas will generally need to be cleaned by removing sulphur and dust, and is dried to prevent corrosion. Biogas is commonly used in a CHP station to produce electricity and heat through gas engines and a steam boiler. Process air will be extracted to an air treatment unit to remove dust and particles, and any odorous compounds in the exhaust air.

4.3 Waste Transfer Facility (WTF)

In the future, large articulated trailers will be required to transfer waste to other waste treatment facilities, i.e. landfill facilities, the material recovery facility, the thermal treatment unit, etc. This will involve the transfer of residual waste at the proposed WTF on-site from Refuse Collection Vehicles (RCVs) to large articulated trailers. After weighing and logging at the weighbridge facility, the municipal solid waste will enter the facility in RCVs. The RCVs will reverse into the

WTF and will then empty their loads onto a large tipping floor in the building and will exit the WTF via the same doorways they entered. The tipped waste will then be transferred to large volume articulated trailers, which will be able to hold approximately 20 to 22 tonnes of waste. The exact method of waste transferral will emerge from the procurement process. The WTF will be under slight negative pressure and the collected air will be transferred to an air treatment system. This will mitigate the emission of any odours generate during the transferral process from the WTF.

4.4 Sludge Hub Centre (SHC)

The SHC will treat municipal sludges generated in the functioning area of Fingal County Council by the thermal drying process. The facility will take in raw and digested sludge cake from the satellite sites and treatment works. The preferred procurement route for the development is under a Design Build Operate (DBO) contract using the restricted procedure, involving a 20 year operating period. The successful tenderer will have to submit a design incorporating the best practicable technology that demonstrates minimal environmental effects during the construction and operation of the facility.

Thermal drying produces a granulated or pelletised product with a very high dry-solids content (in excess of 90%), by direct or indirect application of an external heat source to dewatered sludge cake. Drying is achieved either by convection drying when hot gas / air is blown through the sludge or by conduction drying whereby the sludge is brought into contact with a heated surface. In the case of convection drying, the gas/air flowing through the drier can be heated directly or indirectly. Thermally dried sewage sludge is commonly used in agriculture and can be used as a fuel substitute in municipal waste plants, cement and brick kilns and industrial furnaces.

There is a potential for use of biogas from anaerobic digestion and/or biofuels, such as willow. Willow fuel could be used as a fuel in the sludge drying process. Any use of alternative fuels would depend on the equipment and fuel being an economically viable option. The main energy use (approximately 90%) for the sludge drying plant is to provide heat to the dryer for the thermal drying. The tenders will be evaluated technically based on their proposed energy efficiencies.

The liquor generated by the treatment process is typically high strength (in particular having a high Biochemical Oxygen Demand² and ammonia content) and a treatment and disposal route is required for this waste stream. Partial treatment on-site of the liquor will be undertaken with discharge to the existing Dublin sewerage system and will have to meet daily load limits.

The treatment process offered by the DBO contractor will also be subject to operational limits e.g. for noise, odour and air quality, i.e. the process will operate without exceeding specified limits for noise and odour levels, and ground levels of atmospheric pollutants.

In addition to the four facilities describe above the will also be a main administration building, weighbridge facility and a maintenance building at the Recycling Park.

4.5 Facility Operation

The Kilshane Cross Recycling Park will operate between the hours of 07:00 and 22:00 Monday to Saturday and will normally be closed on Sundays and on Bank Holidays. The facility will also be open for waste acceptance during these hours. Maintenance out of hours may also be required for emergency breakdowns etc.

The operation of the proposed waste management facility at Kilshane Cross will be undertaken under licence issued by the EPA. The conditions of the licence will include measures to minimise or prevent nuisance to the public occurring as a result of the operation of the facility.

Potential nuisances such as odours, dust, noise, litter, vermin, etc. will be addressed with the implementation of the operational plan for each facility to be developed, whereby all activities at the proposed facilities will be carried out in a controlled manner, thereby minimising the possibility of these nuisances.

Monitoring points in accordance with EPA requirements will be established at the site. The primary aims of the monitoring programme are to comply with legislation and the requirements of the EPA and to quantify the quality of the environment in the vicinity of the proposed facility and identify any adverse impacts from the development of the Recycling Park.

² A measure of the organic matter present.

Emission Limit Values (ELV) will be set by the EPA for many of the parameters to be monitored. Exceeding these values will be judged by the EPA to be a non-compliance of the Waste Licence.

Contingency plans will be put in place for each of the facilities, and all accidents and other emergencies will be handled by calling in the relevant authorities including the Fire Service, Gardai, or Ambulance Services. All site operatives and other relevant employees of the facilities will also be trained in emergency response procedures and in fire prevention and control.

5. POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

5.1 Human Beings/ Socio-economic

There are a limited number of residences that will be impacted negatively upon by the proposed Kilshane Cross Recycling Park. There are 15No. dwellings within a 1km radius of the proposed development. The majority of those residing within a one-kilometre radius of the subject site will not have their social or travel patterns disrupted and will encounter little or no change to their existing situation. The proposed site of the Recycling Park is not contained within or is not located adjacent to any area of high natural beauty, high quality landscape character, views or prospects, listed buildings, scenic routes, amenity use designated areas, proposed Natural Heritage Area, European sites, Special Areas of Conservation, or Special Protection Areas. The day-to-day operation of the Recycling Park, including the workings associated with all machinery and visitors to the site will be undertaken in compliance with all health and safety laws and regulations. There will only be one vehicular/pedestrian entrance to the subject lands, which shall be properly and secured against unauthorised access and trespass.

5.2 Flora & Fauna

There are no designated areas in the direct vicinity of the proposed site. There are 2No. sites within 5km of the site, namely Santry Demesne and the Royal Canal. Neither of these sites will be impacted either directly or indirectly by the proposed development. The principal habitat occurring on the site is Dry Meadows and Grassy Verges. This habitat type is considered to be of moderate local ecological value. The majority of this habitat will be removed as part of the proposed development, resulting in a moderate permanent impact on local ecology. Several hedgerows occur along the boundaries of the proposed site. These are considered to be of

moderate to high local ecological value. Fauna recorded on the proposed site are regarded as common and widespread. The proposed development will not have any significant impact on existing fauna. Hedgerows will be retained where possible. The stream on site will not be affected and all water generated on site is to be attenuate and treated prior to controlled discharge. Strict controls will be implemented to avoid pollution or sedimentation of the stream during the construction phase.

5.3 Geology

The proposed development will involve the removal of subsoils at the site to facilitate construction and to create level platforms for construction. This is a direct permanent impact but is not considered to be a significant negative impact. The operation will have no potential impacts on the soil and geology aspect of the environment. The development will result in a permanent covering of part of the site with roadways, paths and other impervious surfaces. Land to the north of the site boundary will remain as agricultural land. The removal of subsoil is an inevitable consequence of implementing the proposed development and no mitigation measures could be proposed. Any material removed off site will be done so in accordance with the Waste Management Act and Regulations. Topsoil and other soils that can be used for amenity purposes will be stockpiled on the site for use in the final landscaping of the development. There is no requirement for monitoring of the soils post construction.

5.4 Water

It is estimated that runoff would be generated from c.70% of the site that will be covered with impermeable surfaces. A drainage system will be installed to accommodate this runoff. The generation of additional runoff is a direct, long-term effect but is not considered to be a significant negative impact. There would be reduced recharge to the ground in the area of the impermeable surfaces. However, this reduction of potential recharge to underlying groundwater resources is not considered to be a significant negative impact. As part of the water management system, it is proposed to discharge treated water runoff to the St. Margaret's Stream. This could have a potential negative impact on the water quality in the stream. However, the correct design and use of attenuation ponds, petrol interceptors and grit traps will prevent the occurrence of surface water contamination. The subject site is underlain by bedrock that is considered to have poor potential for groundwater resources, and there are no private groundwater abstractions.

between the subject site and the St. Margaret's Stream, which is considered to be the discharge zone for groundwater moving beneath the site.

Surface water and runoff will be diverted through a drainage system to an attenuation pond on site where settlement will occur before discharge to St. Margaret's Stream. Runoff will also be diverted through grit traps and petrol interceptors prior to discharge. A discharge licence will be required for this activity and the runoff will meet the quality standards defined in the licence. The proposed drainage system, described in Section 3.2.13, will ensure that the release of particulate matter (mainly grit and dust) to St. Margaret's Stream will be minimal and consequently there will be no significant adverse impact on the surface water quality. During the construction phase all water to be discharged off-site will be undergo treatment prior to discharge to ensure that it does not adversely impact on the surface water environment.

5.5 Air: Dust

The main potential impact from dust at the proposed facility will be from the outdoor C&DWRF. The closest receptors are the residences adjacent to the eastern boundary of the site, along the existing N2; approximately 220m to the southeast. The prevailing wind direction in the vicinity of the site is from the southwest (Refer to Section 2.5.2.3), which means that the C&DWRF is effectively upwind from the residences and the potential for dust impact to these residences is negligible. The nearest properties downwind to the C&DWRF are approximately 300m to the northeast. Potential for dust impact from the facility will be reduced by the elevated section of the new N2 motorway, which is located between the houses and the site of the C&DWRF. It is considered that the rest of the facility operations will not be a source of significant dust. In order to mitigate dust emissions on-site, most areas of the site that traffic will be on will be paved. Hardstand and paved areas will be sprayed with water when necessary, to avoid dust generation. A 3.5m high soil berm will be constructed around the material processing and stockpiling area of the C&DWRF, in order to mitigate the potential impact of dust generation at the facility.

5.6 Air: Odours

As the proposed Recycling Park is a Design/Build/Operate (DBO) project, quantifying odour emissions from the site is difficult. For the BTF, raw materials for composting can be odorous due to the development of anaerobic zones within the input material. The rate of release of odorous compounds into the atmosphere at composting operations is influenced by:

- Long residence time of accepted input product in containers and on-site;
- Temperature of accepted raw materials (increased temperature causes increased anaerobic conditions and volatilisation of odourous compounds);
- The concentration of odourous compounds in the solid phase exposed to air and exposed surface area;
- Processes that generate turbulence like mixing and screening processes;
- Excess moisture;
- Incorrect Carbon: Nitrogen ratio;
- Maintenance of oxygen rich conditions within the composting operations;
- Tipping, screening and shredding of raw materials;
- Non-homogenous aeration and mixing;
- Inappropriate storage of finished material.

The rate of release of odourous compounds into the atmosphere at Anaerobic Digestion operations is influenced by:

- Long residence time of accepted input product in containers and on-site;
- Temperature of accepted raw materials (increased temperature causes increased anaerobic conditions and volatilisation of odourous compounds);
- The concentration of odourous compounds in the solid phase exposed to air and exposed surface area;
- Processes that generate turbulence like mixing and screening processes;
- Positive sour gas release from the pressure release manifolds;
- Gas leakage due to start/stop operation of gas compression engines and flare.

Odours from Waste Transfer Station operations may arise due to:

- Waste tipping;
- Waste movement through front-end loader operation. Sealed refuse sacks are broken easily and emit odourous compounds and trapped gases;
- Waste movement through use of grab; the waste is removed and tipped into the trailer using a grab. This movement allows for the stripping and volatilisation of odourous compounds from the waste matrix. Waste refuse sacks are squeezed and odourous gases are released;
- Waste storage within the building has the potential to contaminate any air in contact with

the waste. Also anaerobic conditions proliferate and the waste "cooks";

- Other minor sources include waste trucks, waste storage trucks, grease traps, oil separator and exposed manholes around the yard.
- All dirty surfaces especially in warmer summer months radiate odour;
- Dust deposits within the building radiate odour and increase background odours within the building;

Odours from Sludge Hub Centre operations may arise due to:

- Delivery of sludge to site in skips may lead to the fugitive emissions of odours during emptying,
- Pumping of sludge from tankers can release odours from the storage tank and pressure release manifold on tanker. Negative ventilation will be provided on the sludge storage tank and all odorous air treated in an Odour Control Unit (OCU),
- Depending on the drying technology, incomplete combustion of odours within the combustion chamber of the sludge drying plant can be emitted untreated,
- Cyclic loading on the OCU may allow for the release of odours from the sludge drying OCU. This will be considered during the design of the OCU,
- Leaks around fans can lead to the emissions of odours from the sludge drying equipment.
- Particulate removal from the odour stream is essential for efficient operation of the sludge drying OCU,
- Open sludge storage areas may cause odours. All sludge storage will be enclosed.

A worst-case odour emission scenario was modelled for the Recycling Park using an atmospheric dispersion model, worst-case meteorological year and worst-case odour emission data to predict any potential odour impact in the vicinity of the proposed Kilshane Cross Recycling Park. It was concluded that during operation of the Kilshane Cross Recycling Park, with considered abatement protocols implemented, no odour impact will be registered by residents living in the vicinity of the facility. During DBO procurement, odour emission limit values will be used for specification. Maintaining good housekeeping practices and implementing an odour management plan for the operators of the Kilshane Cross Recycling Park will mitigate potential for odour impact.

5.7 Air: Pollutants

The operation of the proposed processes at the Recycling Park will lead to emissions of air pollutants and by using atmospheric dispersion modelling, the potential impact of these pollutants were assessed and compared to relevant ambient air quality objectives and limits. Background air quality data was obtained from on-site assessment and review of the available baseline air quality data generated by the Irish EPA. The main compounds assessed include oxides of Nitrogen (NO_x), Carbon Monoxide (CO), Sulphur Dioxide (SO_2), Total Organic Carbon (TOC), particulates (PM), Hydrogen Fluoride, Hydrogen Chloride and Formaldehyde. The results of the modelling showed no exceedences on air quality impacts for the modelled parameters.

5.8 Noise

In terms of noise impact, the proposed development will generate potential noise impacts from the construction of the all the facilities, the operation of the completed facilities and the subsequent road traffic flow associated with operation of the completed facilities. Construction activities on a large site have the potential to generate considerable levels of noise. Noise emissions are associated both with the movement of construction traffic to and from the site, and the operation of equipment on the site e.g. excavators, lifting equipment, dumping trucks ready-mix trucks etc. The noise level prediction from the increase in road traffic flow attributable to construction will be negligible along the N2 at less than 0.2 dB(A).

For the operation of the completed facilities, the potential for noise generation will come from the plant, vehicles and equipment to be utilised at the facilities. The predicted noise levels assume that all mobile and fixed plant is operational together and that all these main noise sources are housed inside a building structure / envelope giving an overall sound transmission loss of 15 dB(A). The maximum predicted noise impact at the closest noise receptor, i.e. the residences adjacent to the southeast boundary of the site, is 46.2 dB(A).

The principal road traffic noise will be that associated with delivery of materials to and from the recycling facility, staff movements, and visitors. Ground vibration can be generated from construction traffic, light vehicles on the roadway and by construction activity. It is predicted that when the recycling facility is completed, the traffic flow on the N2 will be substantially reduced by the opening of the new N2 motorway. The traffic flow increase on the existing N2 in year 2006 (with new N2 motorway open) is predicted at less than 10% of the projected 2004 N2 flow. This increase in noise levels will be insignificant at less than 0.8 dB(A) along the N2. Mitigation

measures for noise impact include the construction of a 3.5m topsoil berm along the southeast boundary of the site in line with nearest residences, and to the around the processing and stockpiling areas of the C&DWRF, and the structures that will house all the main noise sources will be designed to give an overall sound transmission loss of 15 dB(A)

5.9 Landscape & Visuals

Landscape and visual impacts can arise from the proposed development in a number of ways, including the removal of landscape features (temporary or permanent), the construction impacts (short term) and operational impacts, including lighting (medium or long term). Construction impacts are likely to have significant impacts, but by their nature will be short-lived. Construction activities will be largely screened from the south and southwest of the site by the temporary quarry workings and presence of intervening vegetation. Views from the north and northwest will be partially screened by the construction of the new N2 road and intervening vegetation.

The effect of the proposals would be to increase the footprint area and size of industrial type facilities within the Kilshane area. The nature of the development is consistent with other nearby land uses, as the presence of the quarry, power plant and associated structures; power lines and pylons already heavily influence and degrade the landscape character of the area immediately adjacent to the proposed development. The taller structures will be visible but would not significantly change views as tall existing industrial buildings to the southwest of the site are already prominent in these views. Appropriate finishes will lessen the impact of the larger buildings and structures within the landscape. The users of the existing N2 road will receive a slightly negative impact from the development following mitigation. The views from the new N2 will be greater than from the existing N2. This is because the new road will be elevated over the existing N2 in the northeast corner of the site. However as the tree and shrub planting on the embankments of the new N2 road matures, the views of the Recycling Park will be lessened.

Properties located immediately by the southeastern end of the development and which line the existing N2 road will experience the most significant effects of the development; due to their close proximity. The proposed landscape bunding and planting along the southeast boundary of the site will screen these properties from ground floor level and the growth of shrub and tree material will also further lessen the visual impact over time. Mitigation measure of visual impact of the facility include the retention of existing hedgerows and trees surrounding the edges of the

site for screening, supplementary planting of local provenance plant material at the site's perimeter to reinforce the existing landscape structure

5.10 Cultural Heritage

The following are the potential impacts of the proposed development on the cultural assets and heritage:

- Archaeological deposits have been located in the area defined as a possible motte and bailey (site of) these consist of ditches, burnt area, gullies, possible pits and postholes.
- Archaeological deposits in the form of a spread of heat affected and shattered stone have been located in the area flagged as a geophysical anomaly.
- Archaeological deposits could potentially be located within the areas undisturbed by testing.

The following mitigation measures are recommended:

- No development will proceed in the vicinity of the features associated with the possible motte site
- A buffer zone will be created around the possible motte and bailey site, which measures 10m to the south and east and 20m to the north and west.
- It is recommended that if the archaeological deposits identified as a spread of heat affected and shattered stone to the north west of the site and an area of burning cannot be avoided by the proposed development, then a full record of the site will be created through archaeological resolution under licence/ direction of The Department of Environment, Heritage and Local Government.
- It is recommended that full monitoring of any groundworks outside of the recommended buffer zone area be carried out by a suitably qualified archaeologist under licence/ direction of The Department of Environment, Heritage and Local Government.

5.11 Infrastructure & Transport

It is estimated that the total site, when fully developed, will generate some 450No. vehicle movements, comprising 310No. HCV movements and 140No. car and light goods movements

during the normal working day. During construction, it is estimated that the works will generate an average of 10No. HCV trips, with peaks of 20 HCV trips per day being generated during certain operations, such as the pouring of the concrete etc. It is estimated that the development will also generate approximately 20No. other car and light vehicle trips per day, this will include service vans, site visitors, journeys to work etc.

The traffic flow at the location of the proposed exit on the N2 is very high with a predicted AADT of over 30,000 in 2004. At peak times, the level of service on this section of road would be E³. There are proposals to provide a new motorway link between the M50 and the N2 north of Ashbourne. This road is at an advanced stage of construction and is expected to open in 2006. The level of service experienced on the section of the old N2 in the opening year of the motorway at the proposed site, including the proposed facility in full operation, will be at least B³.

The construction phase of the waste facility project will, at worst, correspond with the final phase of the motorway construction. The overall increase in existing traffic in volumetric terms for the construction phase will be less than 0.5% of existing traffic level. When the new N2 Road Scheme is in operation, the main impact on traffic on the existing N2 will be from traffic entering and leaving the facility. The mitigation measures for the impact of traffic from the proposed develop include a single access point to the site, the single access is located towards the centre of the total site in order to maximise the entrance sightlines in both directions, the fence line will be set back to facilitate the provision of sightlines at the entrance to comply with the requirements of NRA Design Manual for Roads and Bridges and it is proposed to incorporate into the design a right turning lane for traffic coming from the Kilshane Cross direction together with a left slip lane for traffic entering the site from the south (M50).

6 INTERACTION OF THE FOREGOING

There is the potential for interaction/ inter-relationships between the impacts of the proposed development within and adjacent to the proposed development, as follows:

- Dust suppression and the use of a vehicle wheel wash at the C&D Waste Recycling Facility

³ National Roads Needs Study, National Roads Authority 1998. Level of service rating E refers to a single carriageway with an average speed of 72kph. Level of service rating B refers to a single carriageway with an average speed of 88kph.

are proposed to mitigate the impact of wind blown dust around the site and to nearby dwellings. All waste handling and storage will take place within the confines each of the waste treatment buildings; therefore, there will be not external generation of dust. Road cleansing will be undertaken to minimise the impact on the road network. These measures will reduce the impact on human beings, ecology, water environment, climate and roads in the vicinity of the proposed development;

- Travel patterns will not be disrupted by the proposed facility. The new N2 Road Scheme will significantly reduce the vehicle numbers on the existing N2. The proposed facility will have negligible impact on the existing N2 once the new Road Scheme is opened, when compared with existing road usage levels. Mitigation measures to improve the entrance road and possible measures to repair any damage caused by the construction traffic to the local roads in the vicinity of the site will further reduce the impact of the facility. These measures will improve road safety for all road users in the Kilshane Cross area.
- The use of road-worthy and sealed containers, tankers and refuse collection vehicles for the transport of organic material and residual waste, both to and from the Sludge Hub Centre, the Biological Waste Treatment Facility and the Waste Transfer Facility, will mitigate against odour generation during transportation. This measure will reduce the impact on human beings and the local environment.
- Odours will be reduced by ensuring that there will be no external handling or treatment of waste. All waste treatment buildings will be constructed to the highest specifications to reduce the emissions and air abatement systems will be installed to treat air and exhaust gases. These measures will reduce impacts of odour on human beings.
- Professional vermin control experts will be employed, if deemed necessary, to ensure vermin activity is minimised. All waste operations will be carried out indoors, thus the proposed facility will not be an attractant to birds.
- Compliance monitoring will be undertaken, as per regulatory conditions and will be reported on, as part of the annual environmental report for whole facility. These reports will be made available to all interested parties, which will allay public concerns as to the operation of the site and will result in a positive interaction with respect to human beings.
- The facility will be operated to Best Available Techniques (BAT) as per EPA recommendations. All information will be available to interested parties; a complaints register will be maintained. The EPA will undertake regular environmental audits, which will demonstrate how the facility is performing. These measures will result in interaction in all environmental criteria.

- The baseline assessment for this project was completed prior to the design of the facility, which allowed major impacts to be avoided. Avoidance of impacts will be used during the design of the proposed facility. The impact and mitigation measures proposed are designed to further ameliorate the impact of the waste management facility on the wider environment.

While there is potential for the above impacts to interact/ inter-relate and result in a cumulative impact, it is unlikely that any of these cumulative impacts will result in significant environmental degradation.

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