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 anticipate 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 6000m^3 and 9000m^3 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

(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.

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 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 22tonnes 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 Demand[2] 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;

[2] A measure of the organic matter present.

- 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;

(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.

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 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 480m^3 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 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.

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 BTF, raw materials for composting can be odourous due to the development of anaerobic zones within the input material. The rate of release of odourous 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 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 form 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.

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 closet 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 theses 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 E[3], 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 B[7]. 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).

(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.

[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.

(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 there 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.