

1. INTRODUCTION

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:

Oxigen Environmental Ltd.,

Merrywell Industrial Estate,

Ballymount Road Lower,

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Name of Contact: Mr. Jim Dowdall

(b) The planning authority in whose functioning area the activity will be carried out on is Cavan 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 Cavan County Council – Cavan Waste Water Treatment Plant.

(d) The location of the proposed development is Corranure Landfill, Lismagraty and Corranure Townlands , Co. Cavan.

The National Grid Reference for the proposed development is: 244488 E, 307729 N

(e) Oxigen Environmental proposes to develop an Integrated Recycling Facility. The Recycling Facility will consist of the following waste management facilities:

- Landfill of 90,000 tonnes per annum - Development of Phase 3 (Cells 3 and 4)
- Civic Amenity Centre and associated infrastructure
- Materials Recovery Facility (MRF) processing 180,000 tonnes per annum.
- Biological Waste Treatment Facility (including Mechanical Biological Treatment) treating up to 65,000 tonnes per annum of segregated domestic and commercial organic waste.

(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.

Waste Management Acts 1996 to 2003			
THIRD SCHEDULE		FOURTH SCHEDULE	
Waste Disposal Activities	Y/N	Waste Recovery Activities	Y/N
1. Deposit on, in or under land (including landfill).		1. Solvent reclamation or regeneration.	
2. Land treatment, including biodegradation of liquid or sludge discards in soils.		2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes).	Y
3. Deep injection of the soil, including injection of pumpable discards into wells, salt domes or naturally occurring repositories.		3. Recycling or reclamation of metals and metal compounds.	Y
4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.	Y	4. Recycling or reclamation of other inorganic materials.	P
5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.	Y	5. Regeneration of acids or bases.	
6. Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 5 or paragraphs 7 to 10 of this Schedule.		6. Recovery of components used for pollution abatement.	
7. Physico-chemical treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 5 or paragraphs 8 to 10 of this Schedule (including evaporation, drying and calcination).		7. Recovery of components from catalysts.	
8. Incineration on land or at sea.		8. Oil re-refining or other re-uses of oil.	
9. Permanent storage, including emplacement of containers in a mine.		9. Use of any waste principally as a fuel or other means to generate energy.	Y
10. Release of waste into a water body (including a seabed insertion).		10. The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.	
11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.	Y	11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	Y
12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.	Y	12. Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.	Y
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.	Y	13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.	Y

Third Schedule (Waste Disposal Activities)

- Class 4** **Surface Impoundment, including placement of liquid or sludge discards into pits, ponds, or lagoons**
This activity is limited to the storage of leachate at the facility pending its disposal at another appropriate facility
- Class 5** **Specially engineered landfill, including placement into lined discrete cells which capped and isolated from one another and the environment**
Disposal of non-hazardous waste in current phase 3- Cell 3 and in future Cell 4.
- Class 11** **Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this schedule**
This refers to the processing of waste on site. The MRF facility will process with up 180,000 tonnes per annum.
- Class 12** **Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule**
To allow for repackaging of waste accepted at the Civic Amenity site and MRF facility and the dispatch of processed waste and unacceptable wastes to alternative disposal facilities
- 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.**
This refers to the MRF facility and the processing of waste. To allow for the recycling/recovery activities and temporary storage prior to removal from site, and also the temporary storage of unacceptable wastes in the waste quarantine area and storage for use in development and/or restoration purposes.

Fourth Schedule (Waste Recovery Activities)

- Class 2 Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes)**
The proposed development will comprise of a BTF for the conversion of up to 65,000tonnes per annum of a range of organic residues to compost. This activity allows for the recovery/recycling of organic materials including paper, timber, cardboard, green waste, and other wastes as agreed by the Agency.
- Class 3 Recycling or reclamation of metals and metal compounds**
This constitutes the remainder of the construction and demolition waste. This activity allows for the recycling or reclamation of metals and metal compounds.
- Class 4 Recycling or reclamation of other inorganic materials**
This is the principal activity. The proposed facility will deal with 180,000tonnes of MRF waste, which will be sourced from existing demolition contracts and third parties. This activity also applies to the recovery or reclamation of glass, clothing and other inorganic wastes at the civic amenity site.
- Class 9 Use of any waste principally as a fuel or other means to generate energy**
For the future possibility of landfill gas utilisation and also if an Anaerobic Digestion process is developed, the biogas produced can be used in a Combined Heat and Power(CHP) plant to produce electricity and heat through a gas engine and steam boiler.
- Class 11 Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule**
This activity allows for the use of recovered materials (e.g C&D Waste) for the development/restoration of the facility.
- Class 12 Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule**
Exchanges of wastes for recycling and recovery at the proposed facilities and the civic amenity facility
- Class 13 Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.**
To include 65,000tonnes of segregated domestic and commercial organic waste from the Biological Treatment Facility and 180,000tpa from the MRF Facility. This activity allows of the recycling/recovery activities and the temporary storage of unacceptable wastes in the waste quarantine area and for use in development and/or restoration purposes.

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

Proposed Waste Types and Quantities

Waste Type	Tonnes per Annum (Proposed)	Total (Over life of site) tones
Household (20 03 01)	125,000	
Commercial (20 03 01)	70,000	
Sewage Sludge (19 08 05)	5,000	
C&D (17 00 00)	100,000	
Ind. Non-haz Sludges	35,000	
Inert waste (imported for restoration)	35,000*	

Proposed Annual Quantities and Nature of Waste

Year	Non-hazardous waste (tonnes per annum)	Hazardous Waste (tonnes per annum)	Total annual quantity of Waste (tonnes per annum)
2009	90,000	100	90,000
2010	180,000	100	180,000
2011	280,000	100	280,000
2012	335,000	100	335,000

1.1 Proposed Development

In 2005 Cavan County Council (CCC) sought Expressions of Interest (EOI) from waste management contractors for the design, build, operation and finance of an integrated waste management facility to be provided on a site adjacent to Corranure Landfill, County Cavan. Oxygen Environmental Ltd. (OEL) responded to this EOI and was subsequently short-listed. In March 2005 CCC issued invitation to Tender (ITN) documentation in respect of this project. In 2007 OEL were given 'preferred bidder' status and in subsequent negotiations agreed a deal to develop the facility in accordance with the ITN and also for the purchase of the landfill subject to licensing and planning.

Cavan County Council are currently the licensed operators of Corranure Landfill under EPA Waste Licence Register No. W077-02 for Corranure Landfill, Cootehill Road, Cavan, Co. Cavan. This waste licence was granted in May 2005 for the intake of 90,000 tonnes per annum and was managed by Cavan County Council staff until October 2007. Oxigen Environmental Ltd. are currently operating the site under a concession agreement and managing all activities, with Cavan County Council retaining responsibility for the completed Cells 0, 1 and 2.

In accordance with the Waste Management (Licensing) Regulations, 2004 (S.I. No. 395 of 2004), Oxigen Environmental are applying for a licence to the Environmental Protection Agency and for planning approval to An Bord Pleanála to operate the active landfill, which includes Cell 3 together with the development of Cell 4, proposed development of a Materials Recovery Facility (MRF) and a Biological Waste Treatment Facility (BTF). As required Oxigen Environmental Ltd. have prepared an Environmental Impact Assessment /Statement (EIA/EIS) and a Waste Licence Application in respect of this proposed development.

The Integrated Waste Recycling Facility will consist of the following waste management facilities:

- Landfill of 90,000 tonnes per annum - Development of Phase 3 (Cells 3 and 4)
- Civic Amenity Centre and associated infrastructure
- Materials Recovery Facility (MRF) for Construction and Demolition Waste Recovery /Commercial and Industrial Facility processing 180,000 tonnes per annum.
- Biological Waste Treatment Facility (including Mechanical Biological Treatment) treating up to 65,000 tonnes per annum of segregated domestic and commercial organic waste.

Oxigen Environmental Ltd. intend to develop the Integrated Recycling Facility including a Materials Recovery Facility (MRF) capable of processing household dry recyclables, construction and demolition waste, commercial and industrial waste, a composting (Mechanical Biological Treatment) facility capable of processing a variety of bio-waste streams. The residual landfill will provide an engineered, managed and environmentally safe facility for the disposal of residual waste.

The landfill will accept non-hazardous residual waste, which has been subject to treatment, including waste arising from the waste recovery facilities. The landfill will have a capacity of 90,000 tonnes per annum (which is the same as the existing capacity) and currently has a life expectancy of approximately four years. The composting facility will have a capacity of 65,000 tonnes per annum.

2. BACKGROUND

2.1 Site Location

The site is located within the townlands of Corranure and Lismagraty adjacent to the Cavan-Cootehill Road (R188). It is situated ca. 3 km to the north-east of Cavan Town. The predominant land use surrounding the site is one of agricultural pastureland. The original landfill is located in a valley. An elevation stretches to the north-east to a height of approximately 135m. The terrain of the southwest reaches a height of approximately 130m. It is located at a height of approximately 108m to the south and 90m to the north. There is a visible peak in the middle of the location. The peak has a height of approximately 114m.

The current licensed operational landfill site is approximately 14.5ha. in size with adjacent lands of approx 33.02 ha, consisting of a haphazard field pattern enclosed by hedgerows and small clumps of woodland. The Lismagraty Stream runs to the northwest of the landfill. The Corranure Stream runs to the southwest along the boundary of the landfill. The landfill site accepts mainly municipal solid waste collected from domestic and commercial sectors in County Cavan and neighbouring counties.

There are approximately 12 residences within 500m from the boundary of the landfill site. Four of these houses are under the ownership of Cavan County Council and one of these houses is occupied. All access to the landfill site is along the R188 Cavan-Cootehill Regional Road which is of a good standard with relatively high traffic flows. The location of the landfill does not affect the town directly or indirectly, with a civic amenity site provided at the landfill for the recycling requirements of the general public.

2.2 Site Suitability

Site investigations and desktop studies have shown that the ground conditions at this site render it extremely suitable for the deposition of non-hazardous waste provided that the correct mitigation measures are put in place. The main mitigation measures will be the provision of a basal lining system for each cell, which consists of a layer of low permeability Bentonite Enhanced Sand (BES) overlain by a High Density Polyethylene (HDPE) liner.

2.3 Site Layout

The facility will consist of a number of elements namely:

Existing:

- Landfill area and associated infrastructure
- Civic Amenity Centre
- Main Administration Building
- Weighbridge
- Wheelwash

Proposed:

- Materials Recovery Facility (MRF) consisting of a C&D waste reception and processing area, an aggregate stockpile area, to include a Dry Recyclables area
- Biological Waste Treatment Facility (BTF) and associated wheel wash
- Secondary Administration Building

The design of this layout incorporates the current active landfill and civic amenity facility, Cell 3 is currently in operation with completion of this cell expected by the end of 2009. Cell 4 will then commence with expected life span of 2.5 years. The existing weighbridges and wheelwash will be utilised by all onsite facilities, however an additional weighbridge will be added for sole use for the BTF. The internal roadways are designed to provide ease of flow of traffic, with a sufficient road area to provide ease of queuing and congestion at the public road. Sufficient area is available for stockpiling excavated material and processed C&D waste with scope for landscaping and further expansion if required.

The site is accessed via the Cavan-Cootehill Road (R188) and is serviced by electricity from the national grid. The existing telecommunications network provides services to the main office building and weighbridge. The water main connection will be sufficient to cater for peak demands of the proposed facility. This connection will not impact on the water supply of the locality.

The proposed development will connect to the existing foul sewer, which discharges to Cavan County Council treatment works. Leachate containment provisions ensure that waters that may have come in contact with waste is not discharged into the surface water system within the vicinity of the site, but collected and stored in the leachate tank. The foul sewer drainage network will remain completely separate from the surface water system.

Surface water runoff from the hard standing areas will be collected in the drainage channels. Surface water will be collected and re used for on- site activities such as wheelwash or dust spraying.

An office building houses all administrative activities and staff facilities

2.3.1 Engineered Landfill

The active phase Cell 3 has approximately four years of waste acceptance remaining. This facility would be regarded as of medium size in an Irish context.

The finished phases will be capped with a low permeability capping system, which will serve to prevent the uncontrolled migration of landfill gas and the infiltration of rainfall into the waste body thereby minimising the quantity of leachate generated. On final capping the site will be allowed to re-colonise to natural species. This final capping will also allow for the collection of clean surface runoff, which will be diverted via a surface water swale and settlement lagoons to discharge to the existing surface water system and possibly for reuse. On completion of landfill operations an aftercare/monitoring programme will be put in place.

2.3.2 Biowaste Treatment Facility

Oxigen also intends to develop a Biowaste Treatment Facility as an integral part of the facility at Corranure. Once operational, this facility will deal primarily with separately collected biowaste from household, commercial and industrial sources. The initial short-term objective of this facility will be to produce compost suitable for usage for landscaping and for the restoration of the landfill. Additional market opportunities will be developed in the medium to long term, which will allow for a more beneficial end use of higher quality compost. The facility will be designed for an overall capacity of biowaste of 65,000 tonnes per annum and will comprise an Enclosed Composting System and Anaerobic Digestion System.

The composting plant will comprise a fully enclosed dedicated warehouse type building with all treatment processes, including acceptance of waste, composting, refinement and storage of final products carried out within the building, which will be under negative pressure. Thus, the facility will, in effect, be an 'in-vessel' composting system no matter what technology is finally chosen. The building will have a height varying from approx. 15 to 18m.

The design and layout of the anaerobic digestion (AD) facility will be based on extensive operational experiences in Europe. The final design and the construction of the AD will be subject to specialist contract. The primary objective of the AD facilities is to produce a liquid fertiliser (digested slurry) with beneficial agricultural characteristics, and as a secondary objective generate revenues from the sale of electricity produced from biogas.

2.3.3 Materials Recovery Facility

Oxigen has extensive experience in the design and build of facilities for materials recovery. This experience will be brought to bear in the design and construction of this facility at Corranure. Best Available Technology will be utilised in the installation of equipment for the recovery of household dry recyclables into separate fractions such as paper, plastic, steel and aluminium and both Construction and Demolition waste and Commercial and Industrial waste into recyclable fractions such as wood, plastic, cardboard, stone, soil etc. All of this equipment will be located and operated indoors in purpose built buildings and the best environmental technologies will be employed to ensure that this facility will not give rise to nuisances.

The processing area will incorporate screens and crushers, and a stockpiling area for storage of segregated material. The types of crushing unit and screen to be utilised will depend on the type of waste entering the facility and the end-use of the recovered material. Timber shredders and magnetic units can be provided for treatment of wood wastes and the recovery of metals. The design of the MRF will have to comply with both Irish and European legislation and to comply with all conditions and emission limits of the planning permission and the waste licence.

2.3.4 Ancillary Infrastructure

The proposed facility will include the ancillary infrastructure such as site entrances, site roads, administration building, reception kiosk, weighbridges, wheel wash, waste quarantine and inspection areas.

2.4 Description of Infrastructure

2.4.1 Security and Control/Access

The main entrance to the site is from the Cavan-Cootehill Road (R188). This will be a common entrance to traffic going to each facility as it links directly to the site road, which will be adequately signposted to direct traffic to the relevant facility. Fencing and security gates will be constructed around the entire site to ensure the site is secure. This will be inspected and maintained regularly to ensure integrity.

During operation hours, Oxigen Environmental Ltd. staff will supervise entry to the facility. The operation of the BTF will be continuous; however, all facilities will only be open for waste acceptance and waste processing (i.e. pre-treatment, waste handling, compost turning, crushing, screening etc.) during the hours of operation. Outside operation hours, the Main Integrated Recycling Facility gate will be locked and monitored by CCTV. Security arrangements will be extended to enclose the entire site.

2.4.2 Road Network/Internal Roads

Access to the landfill is via the R188 Cavan-Cootehill Road. Cavan County Council is responsible for the maintenance of this road. The Cavan-Cootehill Regional Road (R188) has a deceleration turning lane provided for traffic approaching from Cavan Town, similarly a dedicated right turning lane has been implemented from approach from the opposite direction. Warning signs have been placed on approaches to the site to warn drivers of Heavy Goods Vehicles movements ahead.

Access to the site will be via the main entrance gates during operation hours. The general public access will be confined to the reception area and the Civic Amenity Area. The access road is of tarmac construction and a speed limit of 10km applies.

The access road to the landfill, MRF and BTF will be of substantial construction and will be surfaced to allow for proper dust suppression and cleaning. Adequate drainage will be provided and all surface water will be discharged to a petrol /oil interceptor before discharge to the surface water management system. An unpaved service road will be constructed around the perimeter of the proposed extension area.

2.4.3 Other Associated On-Site Infrastructure

On-site infrastructure related to the proposed and existing development includes:

- Hard Standing Areas
- Fuel Storage
- Waste Quarantine Area
- Waste Inspection Area
- Wheel Wash
- Weighbridge and Weighbridge Office
- Sewage Drainage Infrastructure
- Plant, Sheds, Garages and Equipment Compound
- Administration Buildings
- Landfill Gas Infrastructure
- Flaring of Landfill Gas
- Utilisation of Landfill Gas
- Landfill Leachate Infrastructure
- Landfill Leachate Collection
- Storage Infrastructure for Leachate
- Raw Material/Energy/Plant

Details and technical information relating to infrastructure is contained in the main body of the EIS.

2.5 Potential Nuisances

Potential nuisances such as odours, dust, noise, litter, vermin, etc will be addressed with the implementation of the operation plan whereby all activities will be carried out in a controlled manner minimising the possibility of these nuisances. The proposed facility will be operated within the conditions of any Waste License granted by the Environmental Protection Agency or planning permission granted by An Bord Pleanála.

3. EXISTING ENVIRONMENT

3.1 Existing Site

3.1.1 Landscape and Topography

Mitchell & Associates undertook an assessment of the visual effects of the proposed development on the surrounding area and a photomontage was completed of the proposed MRF and BTF buildings.

Topography

The subject site slopes from the boundary of the R188 at a height of between 112 and 113m upwards to the ridge of the reinstated landfill from at a highest point of over 127m. From this point the land slopes down in a north-west direction to the low point of the reinstated land form at a height of 113m. The land to the north-west of this point is currently in operation and with varying heights, with the highest point at present being to the west of the site at a height of 118m.

Slope Regime

The site morphology indicates large area of steeper slopes in the southern portion of the subject, adjacent to the existing landfill operation on the reinstated landfill area.

3.1.2 Existing Vegetation

The existing vegetation consists of hedgerows and small clumps of woodland, the predominant species being Hawthorn (*Crataegus Moonogyna*), Bramble (*Rubus Fruiticus*), Gorse (*Ulex Europaeus*), and with some Ash (*Fraxinus Excelsior*) and Holly (*Hex Aquifolium*).

There is a hedgerow along the boundary at the R1B8 Regional Road which consists of Alder (*Alnus Glutinora*). The main ground-cover over the site is rough grassland.

3.1.3 Existing Land Use and Existing Dwellings

The existing landfill and Civic Amenity area is located to the south of the site, with associated infrastructure adjacent to the landfill.

The predominant land use surrounding the site is one of fallow agricultural pastureland. There are isolated farmhouses scattered around the landscape, the only other land use, being existing landfill. There are approximately 12 residences within 500m from the boundary of the landfill site. Four of these houses are under the ownership of Cavan County Council. The site is located in the Corranure townlands, the land area is approx. 47.5 hectares in total. The primary land use in the vicinity of the landfill is agriculture. The majority of the area surrounding the proposed development is designated as rural, characterised by scattered individual dwellings.

3.1.4 Visual Analysis

The landscape locally is visually-dominated by the existing landfill and its associated buildings. It is situated in the middle of agricultural pastureland with a haphazard field pattern enclosed by hedgerows and small clumps of woodland. Areas of steep slopes are confined to the existing landfill site and southern end of the subject site. Views into the site are confined along the R188 Regional Road and to a laneway giving access to the existing farm buildings. There are also views into the site from isolated housing units surrounding the site located to the west, the east and south-east of the site.

3.2 Human Beings

Cavan County is predicted to grow its economy in both rural and urban areas. The population of Cavan as recorded in the 2002 Census of Population was 56,416, which is an increase from the previous census of 52,994 in 1996.

The site is approximately 3km from the centre of Cavan town and approximately 5 km from the town of Ballyhaise. The population density of Cavan Town is 2,080 to 4690 sq Km, with the surrounds 120 to 2,080 sq Km. Cavan town is one of the major centres of employment in the County. The town contains some small to medium sized industry but the population is largely rural with the predominant activity being agriculture.

The site is currently a non hazardous landfill and Civic Amenity Site with the remaining area currently fallow agricultural lands. The site is not 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, Special Areas of Conservation or Special Protection Areas. In addition, it does not interfere in any manner with the cultural heritage of the area.

There is no reason to expect the population is more (or less) vulnerable to health effects from the proposed development than humans located elsewhere in the county.

3.3 Flora and Fauna

The site lies in drumlin country where low rounded hills create an undulating topography with a north or north-west grain. Streams form part of the north-eastern and western boundaries and both flow north into the Annalee and Erne catchment. The soil is heavy so that the fields become full of rushes if not mown regularly, and are generally used for extensive grazing

The habitats on site are predominantly wet grassland with earth banks between the fields, usually with hedgerows. In places there are drainage ditches, an artificial pond and, around an old farmstead with recolonising bare ground. The streams are eroding and upland in character and that on the north-eastern end has cut a sizeable valley where oak-ash-hazel woodland is developing.

3.3.1 Overall Evaluation

The habitats encountered on the site are widespread and very typical throughout the Irish countryside and none of the habitats recorded are of high conservation value. The site contains species typical of drumlin country and very widely distributed in Cavan and adjacent parts of Roscommon, Meath and Longford. There are no habitats or species of significant interest in a county sense though the stream valley in the north-eastern corner retains a good selection of woodland organisms and is locally valuable.

The site is not included in any designated area and is unlikely to be so in the future. Likewise it does not contain habitats or species listed as of special interest by the EU Habitats Directive (92/43/EEC) or by the Birds Directive (79/409/EEC). There are no plants included in the Flora Protection Order 1999 though most of the bird species have general protection under the Wildlife Act 1976.

3.4 Geology, Hydrogeology and Hydrology

3.4.1 Geology

The site comprises of over-grown grassed agricultural land, in fields bounded by hedgerows. The lands surrounding the site are of agricultural use. Corranure Landfill is mapped as being underlain by lithotypes belonging to the Longford-Down Inlier. fault-bounded Tracts.

Soil Type 25 is the most extensive soil type which features in the area. Soil Type 25 is comprised of 50% Gleys, 40% Acid Brown Earths and 10% Interdrumlin Peats and Peaty Gleys. The predominant soil (50%) is an imperfectly to poorly drained Gley of loam to clay loam texture and of medium base status.

The main associated soil (40%) consists of a moderately well-drained Acid Brown Earth of loam to clay loam texture and low base status. This soil is friable and structure is usually fairly well developed. However, the lower horizons tend to be plastic when wet with less well developed structure.

The use range of the principal soil is limited. It is more suitable to pasture than to arable cropping. Poaching may be a serious limitation to pasture utilisation in wetter periods whilst growth is also somewhat restricted in spring and autumn. The associated soil can be utilised for arable crops and pasture. From the physical standpoint, it is moderately suited to tillage. However, frequency and degree of drumlin slopes is a limitation to machinery use.

In the interdrumlin flats Peat and Peaty Gleys account for 10% of the soils in Soil Type 25. These have serious drainage problems due to high water tables and poor porosity and cannot be greatly improved unless these issues are rectified. Their main use is for summer grazing.

The surface layer in the landfill extension area consists of firm to stiff brown sandy, gravelled clay with boulders and cobbles (boulder clay). Sporadic layers of sand or gravel may also occur. On average the boulder clay possesses a thickness 10 to 15 m.

Boulder clay close to the surface (approx. 1 to 4 m below the surface) consists of a gravelly clay distinguished by higher proportions of gravel and sand and includes the soil formation zone.

Below the boulder clay are middle Ordovician rock from the Coronea formation and the Red Island formation. These consist of fractured highly weathered shale, fractured jointed greywacke and broken fractured fine to medium grained sandstone.

The bottom of the waste body is below the elevation of the surrounding ground level thus indicating that the waste was originally used to backfill the Lough that was present.

3.4.2 Hydrogeology

The GSI has provided a provisional classification of the two bedrock formations underlying the proposed extension area. This classification for both the Coronea and the Red Island Formation is "Poor Aquifer, Generally Unproductive except for Local Zones (PI)".

With the presence of overburden thickness generally in excess of 10m except for the area to the east near R04 where the boulder clay has a thickness of 8m. This implies a general vulnerability rating of low.

3.4.3 Hydrology

All locations sampled and analysed have contaminant concentrations lower than the action level where remediation would be required. Some parameters do fall between the optimum and action levels and the results show a general trend of a higher concentration further downstream from the site. Therefore it can be concluded, the landfill is not the sole contributing source of contamination with local activities a major factor in the water quality of the area.

3.5 Air Quality

Existing atmospheric emissions include: Area sources: uncontrolled landfill gas emissions from fissures in completed areas and also from recently tipped waste in operational Cell 3. Emissions generated from waste trucks and other vehicles travelling along the access and internal haul roads to the tipping area such as dust, sulphur dioxides and nitrogen dioxides.

Dust monitoring for 2008 shows a significant increase in compliance with the licence emission limit values, with all monitoring points being compliant with the exception of the monitoring point located adjacent to the Cootehill Road which is the furthest point away from activities on site. This is due to measures having been put into place by the operator to reduce dust emissions on site and site access roads.

There are no significant emission sources of sulphur dioxide in the area, as houses in the locality would be either low-sulphur distillate oil or peat. Diesel fuel used by road vehicles also has very low sulphur content.

Landfill gas and odour emissions at the existing facility are well within the limits set out by the waste licence and complaints of odour in the area have been significantly reduced since being taken over by the current operator (the applicant).

3.6 Noise and Vibrations

Intermittent sources of noise include tipping vehicle and reverse sirens at the active working face, with vehicle stalling on the weighbridge. At the existing landfill road traffic is the greatest background source of noise in the area. Current landfill activity takes place between the hours of 08:00 and 17:00 weekdays and between the hours of 8:00 and 13:00 on Saturdays. Ground vibration is not anticipated to cause an issue.

3.7 Traffic

All traffic to the site is from the Cavan-Coochill Road (R188). The general surfacing and structure of the road is considered good. A turning lane has been provided for traffic from both sides entering the landfill.

There have been no serious accidents at the landfill site entrance since construction of the improved junction during the remediation works carried out in 2002.

3.8 Climate

Prevailing winds are from a south westerly direction; approximately 60% of winds are from the western sector with an incidence of calm 'slack' wind conditions of about 5%. The annual average wind speed at Clones is 4.4 m/s with less than 6% of the hourly observations recording wind speeds over 9 m/s.

The local rainfall pattern is important as it affects the moisture content of the surface of internal haul roads and hence potential for fugitive dust emissions from the road surface. Clones weather station shows a mean annual rainfall of 984 cm.

The area has an average daily temperature of 9 degrees Celsius.

3.9 Archaeology and Cultural Heritage

The proposed building areas and Cell 3 and 4 proposed for development have been largely modified and excavated to natural subsoils during the lifetime of Corranure landfill.

3.10 Material Assets

The waste recycling and processing facility and biological treatment plant does not require any major modifications to the existing telecommunications or electricity supplies in the area.

The proposed development will reduce the need to transport larger volumes of waste greater distances for treatment and disposal.

The site is not overlooking or shadowing any existing development and it is unlikely the development will cause a decrease in adjoining property values, given the existence of an already established landfill.

4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 Landscape and Topography

4.1.1 Potential Impacts

Construction impacts relate to ground disturbance, hedgerow removal and erection of buildings. However the requirement to further increase the capacity of the Corranure Landfill Site will have an insignificant impact on the landscape.

4.1.2 Proposed Mitigation Measures

The planting of the mound with a natural pattern of scrub woodland will serve to mitigate the apparent mass in the landscape. It is intended that the utilization of a scrub woodland mix of Hawthorn, Alder, Beech, Oak and Blackthorn will create a stable and visually - appropriate plant community on the flanks of the mound. The remaining areas of mounding will be covered by an appropriate mix of wild grasses and wildflowers as a low ground cover and visual foil to the scrub-woodland.

Best landfill management and operational practices in accordance with EPA Guidelines will ensure that the development of the proposed facilities at Corranure Landfill will have no adverse impact on the surrounding lands

4.2 Human Beings

4.2.1 Potential Impacts

For an effect on human health outside the development there must be emissions from some type from the site. The main possible emissions include

- Noise
- Traffic
- Landfill gas
- Leachate
- Wind-blown litter
- Vermin and insects

4.2.1.1 Noise

Noise levels will increase in the immediate vicinity during the construction period due to increased traffic and construction work. The noise will not be sufficient to induce hearing loss in those environmentally exposed. Any effects are likely to be related mainly to annoyance. The relatively short-term construction period minimises the risk of any health effects.

In summary it is concluded that noise levels at the nearest sensitive location (occupied residential premises) will not significantly deviate from the current background day time noise levels. Due to the existing background noise levels existing at the site, it is contended that the proposed development will not impact on the surrounding environment.

4.2.1.2 Traffic

No public roads or pedestrian routes will be changed by the proposed development and all traffic will use existing roads and access points.

A traffic impact assessment was conducted in order to assess the potential impacts of additional traffic movements generated during operation of the facilities (EIS Section 3.8: Traffic). The proposed facilities will initially result in total, some 242 movements created by the provision of the new facilities, 122 HGV & 120 others, would be created over the working day. This would average 17 movements per hour, the worst periods would be the 7.30 to 8.30 period in the morning (journey to work and outward truck movements) and the 5.00 to 6.00 pm period in the evening (trucks to base and journey home) when an estimated 40 trips (32 car & 8 HGV movements) would be generated. As such the worst case scenario from a traffic aspect would be that an estimated 302 additional trips would be generated per day or 50 in the peak hours. It was concluded that the increased landfill traffic will not have a large impact on peak hour flows on the R188.

4.2.1.3 Landfill Gas

Odour, in most instances, does not represent any direct harm to human health but can be very disturbing. Landfill gas contains the gases carbon dioxide and methane as major constituents. Both gases show extremely low toxicity and are natural constituents of the lower atmosphere. Landfill gas also contains trace amounts of other gaseous compounds generated during the microbial degradation of organic waste. Some of these compounds, though not occurring in toxic concentrations, can be sensed by humans because of the low smelling threshold for such compounds, e.g., for hydrogen sulphide.

4.2.1.4 Leachate

Groundwater in many areas is a major source of drinking water. The quality of groundwater, therefore, has to be protected rigorously. The lining system of the Cells 3 and 4 of Corranure Landfill in addition to the large depths of in-situ low permeability clay will

prevent any leachate from reaching groundwater thus making sure that groundwater quality, human health, and the environment will not be affected by the proposed development

4.2.1.5 Wind Blown Litter

Windblown litter can be an issue at a landfill facility where the proper control measures are not in place

4.2.1.6 Vermin and Insects

Rodents can be harmful since they may transfer pathogenic viruses, micro-organisms, parasites etc. and may, therefore, represent an important factor for the spreading of various diseases. Control of rodents is a mandatory prerequisite for any waste management facility. Vermin control specialists are currently employed on site this will be extended as the site develops.

Flies and birds can also pose a problem, where they are attracted to raw waste which has not yet been covered.

4.2.2 Proposed Mitigation Measures

The design and operation of the proposed site will be in accordance with the Landfill Directive, Animal By Products Regulations, Guidance Documents and the EPA licence, which will minimise emissions from the site.

Mitigation measures introduced to reduce the environmental nuisances of dust, odour, litter, traffic, vermin, birds, leachate and landfill gas will greatly reduce the level of concern for the health of the local community surrounding the landfill. These measures are currently in place at the existing facility in accordance with an Environmental Management Plan for the landfill as per Waste Licence W077-02 and will be incorporated to include the proposed development once in operation.

The absence of hazardous waste entering the site will significantly reduce the likelihood of substances that could be toxic in low levels appearing in leachate. Groundwater and particularly drinking water will not be contaminated given proper operation and mitigation. The provision of a composite lining system within each cell will ensure that the groundwater reservoir will be protected from leachate contamination.

Landfill gas is contained and collected as completely as possible. Operations on the site involve minimisation of the area of the site exposed at any time to enable better control of landfill gases. A landfill gas collection and flaring system is currently active at the landfill. The absence of hazardous waste entering the site will significantly reduce the likelihood of substances that could be toxic in low levels appearing in the landfill gas.

The following operation procedures are implemented and will continue to be implemented on a daily basis as mitigating measures against vermin and pests:

- The landfill working area will be kept as small as possible (max. 25metres wide)
- The waste will be compacted with a high tonnage steel wheel compactor
- Active waste disposal areas will be temporarily covered by approximately 0.3 m of soil when there is no disposing of waste taking place for a lengthy period of time
- Waste lorries transporting waste to the site will be covered appropriately
- All waste will be stored indoors or in sealed containers where possible prior to removal off site and waste activities and site procedures will incorporate vermin prevention measures
- Fly nuisance will be minimised by the rapid removal of degradable waste offsite, the washing of the floor in the buildings with disinfectant and the covering of all stored waste onsite.

4.3 Flora and Fauna

4.3.1 Potential Impacts

The principal habitat occurring on the site is wet grassland. This habitat is considered to be of low ecological value. Part of this habitat will be removed during construction of the proposed development, but much of the lands will remain in their current state and be unaffected by the proposed developments.

Fauna recorded on the site are regarded as common and widespread. It is unexpected to have an increase in scavenging birds and mammals that are currently on the landfill site. The proposed development will not have any significant impact on the existing fauna.

The proposed development will involve the removal of some internal hedgerows, but the majority of the hedgerows will remain. The majority of the habitat will be removed in localised areas as part of the development works, resulting in a moderate permanent impact on the local ecology.

4.3.2 Proposed Mitigation Measures

The following measures are recommended to reduce the impact of hedgerow removal:

- Clearing of hedgerows will be undertaken outside the nesting period from March 1st to August 31st
- The trees and hedgerows planted, before, during and after the proposed developments life span, will consist of species representative of those in the surrounding environs

Strict controls will be implemented to avoid pollution or sedimentation of the streams during the construction phase. Measures include the construction of surface water attenuation ponds, silt traps and any other measures deemed necessary.

A comprehensive landscaping programme is to be undertaken on the proposed site. The

programme will be conducted on a phased basis and will consist of native woodland boundary planting. Species chosen will be native and reflect the species composition of the surrounding hedgerows.

4.4 Geology, Hydrogeology and Hydrology

4.4.1 Potential Impacts

The proposed development will involve the removal of the subsoil's at the site to facilitate construction of Cell 4 and create level platforms for the proposed buildings, the development will result in permanent covering of part of the site with roadways, paths and other impervious surfaces. Lands north of the site will remain as fallow lands.

A possible hydrological risk is limited to the surface water on location, which feeds directly into the receiving waters from the gravely clay close to the surface. This possible risk must be avoided via appropriate technical measures. The design and position of monitoring facilities (position and expansion of the groundwater wells) must take into account this potential danger.

There will be no direct discharges to groundwater or any groundwater abstractions as part of the proposed integrated facility.

4.4.2 Proposed Mitigation Measures

The removal of subsoil is an inevitable consequence of implementing the proposed development, this will be done in accordance with the Waste Management Act and Regulations. Topsoil and other soils will be stockpiled to be used as cover material and for final landscaping of the development. New leachate drains installed on site will be constructed in accordance with applicable building standards thereby minimising the potential for leaks in underground pipes.

All fuels will be stored in fully bunded areas in accordance with relevant environmental guidelines and recognised standards and tested in accordance with the waste licence conditions. All vehicles will be serviced and fuelled in appropriately designated areas which will be fully contained to prevent spillages into the surface water network. Appropriate measures such as spill kits etc. will be at designated locations on the site.

The measures that will be adopted in order to protect groundwater are:-

- To provide containment of the base and the sides of the landfill
- To provide a leachate collection and removal system in order to maintain a low leachate head.

4.5 Air Quality

4.5.1 Potential Impacts

The potential impacts to air quality due to the proposed development are:

- Dust
- Landfill Gas
- Odour
- Aerosols

4.5.2 Proposed Mitigation Measures

The measures to control and reduce emissions include:

- Tipping of waste material shall be restricted to a designated area of the active cell.
- Waste material will be covered daily with suitable inert material, such as subsoil, stone, rocks, bricks, crushed concrete etc., to control emissions of dust and malodours from the surface of the active cell. At the end of each week, the tipped material will be covered with a layer of inert material, with a minimum depth of 150mm.
- When the surface of the cell has reached the design height it will be capped, restored and re-seeded with grass.
- Burning of any waste material on-site shall be prohibited.
- Mobile plant equipment used on-site will be regularly maintained to prevent excessive exhaust emissions of particulates and other pollutants.
- Haul roads within the landfill extension will be covered with compacted hardcore to reduce dust emissions from trucks travelling to and from the tipping area.
- The public road near the entrance to the landfill and hard-paved road surfaces within the site reception area will be maintained to ensure any spillages of material from vehicles entering or leaving the site will be promptly removed to reduce dust emissions from the road surface.
- A mobile water sprayer will be employed during dry weather conditions to reduce dust emissions from the access road and haul roads within the landfill site.
- During dry spells if dust is being generated, stockpiles will be kept moist.
- All trucks departing from the site will pass through the wheelwash, which shall be maintained with the silt removed on a regular basis.
- All gas or leachate collection boreholes will be capped and inspections carried out at regular intervals to inspect the completed cells for leaks and uncontrolled venting of landfill gas.
- Regular inspections will be carried out of completed cells to identify and eliminate, where practicable uncontrolled emissions of landfill gas

4.6 Noise and Vibrations

4.6.1 Potential Impacts

The proposed development consists of:

- The construction of all the proposed activities
- The operation of the completed facilities
- The subsequent road traffic flow associated with the operation of these facilities

The maximum noise levels predicted will occur during the construction phase of the development and will pertain for short periods only and restricted to day light hours, typically between 8am and 6pm.

The main noise sources during the operational phase of the facility are likely to include:

- Vehicles entering the site
- Civic Amenity and employee vehicles entering and leaving the site
- Loading shovel
- Screening Equipment

4.6.2 Proposed Mitigation Measures

A 3.5m topsoil berm will be constructed along the northeast of the site in line with house locations and around the processing and stockpiling areas of the MRF. As the site develops mitigation measures will be assessed and implemented as necessary.

There are several mitigation measures that can be put in place to further reduce noise levels impacting on the receiving environment, this will include:

- Proper training of operators in equipment use to minimise noise generation, excessive revving of engines, ensuring that vehicles are operated with noise control hoods closed and equipment turned off when not in use.
- Proper maintenance of vehicles and equipment, checking the efficiency of silencers, lubrication of bearings
- The control of on-site activities through the implementation of good management practices will combine to ensure the noise generated at the site will not have any undesirable effects on the existing neighbouring environment
- The closure of all doors on the main plant buildings
- A speed limit of 10km per hour applies to the site

There are no off-site vibration effects. No amelioration measures are required.

4.7 Traffic

4.7.1 Potential Impacts

The potential catchment area for the facility includes counties Cavan, Monaghan, Louth, Meath, Westmeath, Kildare, Laois, Longford and Leitrim. Waste collectors within the immediate catchment of the facility will be delivered directly to the facility in refuse collection vehicles. Each refuse collection vehicle will carry between 7 to 12 ton loads, depending on the nature of the waste. The refuse collection vehicles will deliver mixed residual waste, source separated recyclable waste as well as source separated organics. Note: Each load results in two movements, arrival and departure. Each movement is a single trip. A maximum of 335,000 tonnes will be accepted annually with no more than 1070 tonnes per day being accepted.

Potential impacts include:

- Accidents
- Litter
- Queues
- Congestion

4.7.2 Proposed Mitigation Measures

The following improvements are recommended on the approach to the existing landfill site to improve driver awareness of the presence of the landfill entrance ahead:

- Warning signs should be placed on the approaches to the landfill to warn drivers of the HGV movements ahead.
- A regular inspection of the public road to be undertaken and in the event of significant quantities of mud on the road, the road shall be swept accordingly.
- The road will be inspected for any windblown litter, which will be collected accordingly. All trucks will be suitably covered to prevent the accumulation of litter during transport.
- The site has two weighbridges that allow for two vehicles to be entering or leaving the site at the same time without contributing to the overall queue system.
- Traffic to and from the site will not be permitted to park on the public roadway or to impede the free flow of traffic on the adjoining road network.
- Further site specific mitigation measures are discussed in the main body of the EIS together with a detailed Traffic Impact Assessment and a Road Safety Audit.

4.8 Climate

4.8.1 Potential Impacts

The proposed extension of the landfill facility will not have a significant impact on the climate of the area. Emissions of methane and other greenhouse gases will be insignificant

from the landfill due to gas collection and flaring. The main sources of air emissions from the developments, namely the MRF and biological treatment plant are pollutants of climatic concern (primarily CO₂, NO_x and SO₂) would be vehicular/traffic which may have the potential to contribute to atmospheric conditions.

4.8.2 Proposed Mitigation Measures

Good site practice during the construction and operation phases of the proposed development will ensure that the overall impact of air emissions will not be significant. All management practices will be based on Best Available Technology. This together with mitigation measures for Air and Traffic emissions will decrease the potential impacts on the climate of the area.

4.9 Archaeology and Cultural Heritage

4.9.1 Potential Impacts

Areas where the MRF and the Biological Waste Treatment facility to be located is situated approx 60 metres from an existing ringfort (CN 0021-063). There will be no physical impact on this ringfort. As the surrounding landscape is largely developed, modified and encroached upon in the past there will be a low visual impact upon the ringfort.

4.9.2 Proposed Mitigation Measures

- An appropriate buffer zone to be devoid of any development surrounding Lismagraty ringfort (RMP CN 021-063) and this is to be agreed with the DoEHLG
- Archaeological monitoring or testing of the marshy greenfield areas located at the eastern end of Area A (MRF Building)
- Also it is recommended that an action plan be established to provide appropriate preservation and conservation of Lismagraty ringfort and the surrounding areas. This should be done in association with the Heritage Division of the DoEHLG

4.10 Material Assets

4.10.1 Potential Impacts

The main potential impact on material assets of the area relate to an overall reduction in the residential quality as a result of environmental nuisances (odour, litter, vermin, birds, noise, insects and pests, fires, mud and dust). Since 2001, substantial improvements have been carried out to the infrastructure and operational practices of the existing landfill and measures for the control of environmental nuisances are in place.

4.10.2 Proposed Mitigation Measures

The proposed developments to Corranure Landfill will not have an adverse impact on land use as the amount of land in use is small and it is proposed to restore the lands to their current agricultural use following the closure of the landfill.

4.11 Interaction of the Foregoing

4.11.1 Potential Impacts

There is potential for the interaction between the impacts of the proposed development within and adjacent to the proposed development. Atmospheric and noise emissions from the facilities has the potential to impact on human beings in the vicinity of the site. Impacts from dust and odour have the most significant impact of the proposed facilities.

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

4.11.2 Proposed Mitigation Measures

The facility will be operated to the Best Available Techniques (BAT) as per EPA recommendations and under instructions of a waste Licence. 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.

Compliance monitoring will be undertaken, as per regulatory conditions and will be reported on, as part of the annual environmental report for the whole facility. These reports will be made available to 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.

5 CONCLUSION

The proposed development by Oxigen when run in full compliance with the conditions of the waste licence and in accordance with the environmental controls proposed in this EIS will not impact negatively on the current environment. This site is deemed a suitable location for the activity given it is currently operating as both a landfill and a Civic Amenity Facility.

The proposed development will have a positive impact, in that it provides a facility for the recovery of a significant tonnage of biodegradable waste and also provides for the recovery and disposal of construction and demolition, commercial and industrial and residue waste in an environmentally sensitive and sustainable and proven manner. The facility will play an integral part in the region's achievement of national waste recovery and recycling targets in line with local, national and EU legislation and local and national development plans and waste management plans.