



Mayo County Council

Derrinumbera Sludge Hub Centre & Leachate Treatment Facility

APPLICATION FOR REVIEW OF DERRINUMERA WASTE LICENCE W021-01

VOLUME II ATTACHMENTS

For inspection purposes only.
Consent of copyright owner required for any other use.

May, 2007

TOBIN CONSULTING ENGINEERS



Document Amendment Record

Client: Mayo County Council

Project: Derrinnumera Sludge Hub Centre & Leachate Treatment Facility

Title: Volume II Attachments
 Application for Review of Derrinnumera Waste Licence W0021-01

For inspection purposes only.
 Consent of copyright owner required for any other use.

PROJECT NUMBER: 1908				DOCUMENT REF: 1908 Volume II Attachments Rev A			
B	Final Draft	MH	08/05/07	DG	08/05/07	MFG	08/05/07
A	Issued to Client	MH	03/04/07	ES	03/04/07	MFG	03/04/07
Revision	Description & Rationale	Originated	Date	Reviewed	Date	Authorised	Date
TOBIN Consulting Engineers							

TABLE OF CONTENTS

ATTACHMENT A.1	NON-TECHNICAL SUMMARY	1
ATTACHMENT B.1	OWNERSHIP PLAN	31
ATTACHMENT B.2	LOCATION OF ACTIVITY	32
ATTACHMENT B.3	PLANNING AUTHORITY	33
ATTACHMENT B.4	SANITARY AUTHORITY.....	34
ATTACHMENT B.6	NOTICES AND ADVERTISEMENTS.....	35
ATTACHMENT B.7	TYPE OF WASTE ACTIVITY	36
ATTACHMENT C.1	TECHNICAL COMPETENCE AND SITE MANAGEMENT	40
ATTACHMENT C.2	ENVIRONMENTAL MANAGEMENT SYSTEM	42
ATTACHMENT C.3	HOURS OF OPERATION.....	44
ATTACHMENT D.1	INFRASTRUCTURE AND OPERATION	45
ATTACHMENT D.2	FACILITY OPERATION	54
ATTACHMENT D.4	LEACHATE MANAGEMENT	56
ATTACHMENT D.5	LANDFILL GAS MANAGEMENT	59
ATTACHMENT E.1	EMISSIONS TO ATMOSPHERE	60
ATTACHMENT E.2	EMISSIONS TO SURFACE WATERS.....	61
ATTACHMENT E.3	EMISSIONS TO SEWER.....	62
ATTACHMENT E.4	EMISSIONS TO GROUNDWATER.....	64
ATTACHMENT E.5	NOISE EMISSIONS.....	65
ATTACHMENT E.6	ENVIRONMENTAL NUISANCES	66
ATTACHMENT F.1	TREATMENT, ABATEMENT AND CONTROL SYSTEMS.....	68
ATTACHMENT F.2- F9	MONITORING AND SAMPLING POINTS	69
ATTACHMENT G.1	RAW MATERIALS, SUBSTANCES, PREPARATIONS & ENERGY	78
ATTACHMENT G.2	ENERGY EFFICIENCY	79
ATTACHMENT H.1	WASTE TYPE AND QUANTITIES.....	80
ATTACHMENT H.2	WASTE ACCEPTANCE PROCEDURES	84

ATTACHMENT H.3	WASTE HANDLING	85
ATTACHMENT H.4	WASTE ARISING.....	86
ATTACHMENT I	EXISTING ENVIRONMENT & IMPACT OF THE FACILITY ...	87
ATTACHMENT J	EMERGENCY PREVENTION & EMERGENCY RESPONSE .	88
ATTACHMENT K	REMEDICATION, DECOMMISSIONING, RESTORATION & AFTERCARE	92
ATTACHMENT L	STATUTORY REQUIREMENTS.....	93

*For inspection purposes only.
Consent of copyright owner required for any other use.*

TABLES & APPENDICES

TABLES

Table A1.1: Waste Inputs at Derrinumera Landfill (Table abstracted from original application for Waste Licence at Derrinumera (Feb. 1998)).....	4
Table A1.2: Waste Inputs for Proposed Development of a Sludge Hub Centre and Leachate Treatment Facility at Derrinumera	6
Table A1.3: Estimation of Raw Material, Substances, Preparations and Energy Requirements for Proposed Facilities.....	7
Table F2.1: Existing Dust Monitoring Locations at Derrinumera Landfill Facility	70
Table F3.1: Existing Surface Water Monitoring Locations at Derrinumera Landfill Facility.....	71
Table F5.1: Existing Groundwater Monitoring Locations at Derrinumera Landfill Facility	73
Table F6.1: Existing Noise Monitoring Locations at Derrinumera Landfill Facility	75
Table F7.1: Existing Meteorological Monitoring Locations at Derrinumera Landfill Facility	76
Table F8.1: Existing Leachate Monitoring Locations at Derrinumera Landfill Facility.....	77
Table G1.1: Estimation of Raw Materials, Substances, Preparations and Energy Requirements for Proposed Facilities.....	78

APPENDICES

Appendix 1	Most Recent Planning Permissions
Appendix 2	Most Recent Waste Licences
Appendix 3	Site Notice
Appendix 4	Newspaper Advertisement
Appendix 5	Correspondence to An Bord Pleanála

For inspection purposes only.
Consent of copyright owner required for any other use.

ATTACHMENT A.1 NON-TECHNICAL SUMMARY

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

Article 12(l)

1.1 ARTICLE 12(L)(A)

The name, address and contact details of the applicant are:

Applicant Details: Mayo County Council,
Aras an Chontae,
The Mall,
Castlebar,
County Mayo.
Tel: 094-9024444
Fax: 094-9023937

Correspondence Details: Michael F. Garrick, Director,
Tobin Consulting Engineers,
Market Square,
Castlebar,
County Mayo.
Tel: 094-9021401
Fax: 094-9021534

Address of registered or principal office of Body Corporate:
Not applicable.

1.2 ARTICLE 12(L)(B)

The name of the planning authority in whose functional area the relevant activity will be carried on:

The planning authority in whose functional area the activity will be carried out on is Mayo County Council. An application for approval for the proposed development has been sent to An Bord Pleanála.

1.3 ARTICLE 12(L)(C)

The name of the sanitary authority in which the sewer is vested or controlled:

The sanitary authority relevant to the proposed development is the Water Services Department of Mayo County Council.

1.4 ARTICLE 12(L)(D)

Location and national grid reference of the facility to which the application relates:

The location of the proposed development is at Derrinnumera Landfill Site, Derrinnumera / Drumilra (Townlands), Newport, County Mayo. The National Grid Reference for the proposed development is E1044, N2936

1.5 ARTICLE 12(L)(E)

Nature of the facility concerned including capacity:

Mayo County Council seek the review of Waste Licence W0021-01 to include a Sludge Hub Centre and Leachate Treatment Facility at the site of Derrinnumera Landfill Facility. The proposed development will consist of the following elements:

- *County Mayo Sludge Hub Centre (SHC)*

A **County Mayo Sludge Hub Centre (SHC)** at the existing landfill facility, which is required for the fulfilment of the Mayo Sludge Management Plan, adopted by the Elected Members in 2001, and the amended Mayo Sludge Management Plan, 2003. The SHC shall be utilised for the collection, drying, temporary storage and sustainable re-use or disposal of treated municipal sludge collected from municipal treatment plants throughout County Mayo, with design loadings of 24,731 tonnes per annum (tpa) (3,365 tDS) of wastewater sludge and 7,846 tpa (1,412 tDS) of water treatment sludge (design loadings for Year 2020). It is expected that a small amount of sludge will be imported as liquid sludge to the Sludge Hub Centre (SHC), from smaller treatment plants; the remainder will arrive at the SHC as sludge cake. Both a sludge-drying unit and a tunnel composting system are proposed for the sludge treatment process.

- *Interim Sludge Drying/Lime-Dosing System*

Interim Sludge Drying/Lime-Dosing System: The Council wish to include within the review, the option to temporarily relocate to Derrinnumera, an existing interim sludge drying/lime-dosing system, should the need arise for a short term fallback, prior to commissioning of the SHC permanent plant. The maximum expected operation period of the Interim Plant at Derrinnumera would be 3 years, processing an estimated 27,844 tonnes per annum (tpa) of sludge on start-up (but not exceeding Year 2020 design loadings listed above). This temporary plant would be retired upon commissioning of the Sludge Hub Centre permanent plant.

- *Leachate Treatment Facility*

Leachate Treatment Facility: The Council wish to implement leachate treatment at Derrinnumera, in preparation for compliance with an An Bord Pleanála instruction to cease leachate imports to Castlebar WWTP. The facility will cater for the treatment of 500 m³/day of leachate as a daily maximum. It is

proposed that landfill leachate will undergo its complete treatment at this proposed Leachate Treatment Facility. It is then proposed to pump the Leachate Treatment Facility effluent, via a pumped rising main, to the outfall of the proposed Newport Wastewater Treatment Plant.

1.6 ARTICLE 12(L)(F)

Specify classes of activity concerned, in accordance with the third and fourth schedules of the Act:

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:

The principal activity to be undertaken is covered by:

Third Schedule, Class 1- 'Deposit on, in or under land (including landfill)'

Other activities are as follows:

Third Schedule, Class 4- 'Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons'

Third Schedule, Class 5- 'Specifically engineered landfill including placement into lined discrete cells which are capped and isolated from one another and the environment'

Third Schedule, Class 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'

Third Schedule, Class 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)'

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, or the premises where the waste concerned is produced'

Fourth Schedule, Class 2- 'Recycling or reclamation of organic substances which are not used as solvents (including composting or 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 energy'

Fourth Schedule, Class 10- ‘The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system’

Fourth Schedule, 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’

1.7 ARTICLE 12(L)(G)

Specify, by reference to the relevant European waste catalogue codes, the quantity and nature of wastes, which will be treated, recovered or disposed of:

At present the existing Derrinnumera Landfill Facility is licensed to accept a quantity of waste not exceeding 40,000 tonnes per annum. The original Application submitted to the Agency for a Waste Licence at Derrinnumera (February 1998) presented the following Waste Inputs at Derrinnumera Landfill:

Table A1.1: Waste Inputs at Derrinnumera Landfill (Table abstracted from original application for Waste Licence at Derrinnumera (Feb. 1998)

Waste Inputs at Derrinnumera Landfill (Table abstracted from original application for Waste Licence at Derrinnumera (Feb. 1998))		
Waste Type	Tonnes per Annum	EWC Code ¹
Household	17,000	20 03 01
Commercial	5,800	20 03 01
Sewage Sludge	3,400	19 08 05
Construction and Demolition	2,000	17 09 04
Industrial Non-Hazardous Solids	1,750	20 03 01

Existing Waste Licence No. W0021-01 allows for the following Waste Acceptance and Handling, as stated under Condition 5 of same;

Condition 5.1 of Licence W0021-01 states:

‘No hazardous waste shall be disposed of in the landfill. From the date of grant of this licence, unless otherwise agreed by the Agency, no liquid or sludge waste shall be accepted for disposal to landfill (except non-hazardous sludge and silt produced from on-site activities).’

Condition 5.2 of Licence W0021-01 states:

¹ European Waste Catalogue Codes

'Subject to Condition 5.1 only those waste types listed in Table E.1.3 of the application shall be disposed of in the landfill unless prior agreement of the Agency has been obtained'.

Condition 5.3 of Licence W0021-01 states:

'Unless otherwise agreed by the Agency, only waste types specified in Drawing No.002034/11/628 "Plan and Sections of Proposed Civic Amenity Site" shall be accepted at the civic waste facility. Household hazardous waste shall only be accepted at the facility once the requirements of Condition 4.14.3 have been satisfied.'

Condition 5.6 of Licence W0021-01 states:

'The quantity of wastes to be accepted for disposal to landfill at the facility shall not exceed 40,000 tonnes per annum, unless otherwise agreed in advance with the Agency.'

1.7.1 Current Situation:

The development is sited on an existing landfill facility, which is currently licenced for 40,000 tpa of non-hazardous waste for disposal to landfill. The municipal waste accepted here includes both household and commercial waste. According to the 'Replacement Waste Management Plan for the Connaught Region 2006-2011', 64% of municipal waste produced in Mayo is household waste and 36% is commercial waste.

Therefore, it can be assumed that out of 40,000 tpa of non-hazardous landfill waste:

64% = Household Waste = 25,600 tpa
36% = Commercial Waste = 14,400 tpa

It should be noted however, that although the sum of above amounts account for the maximum amount licensed (i.e. 40,000 tpa), the actual amount of non-hazardous landfill waste accepted at Derrinnumera Landfill varies annually. (Refer to Section 1.1 of the EIS for actual waste acceptance values).

1.7.2 Proposed Development:

The following is the nature and quantity of the waste, which will be treated/recovered/disposed at the proposed development (above landfill figures should also be included when considering total future quantities of waste to be accepted at the facility as a whole):

Table A1.2: Waste Inputs for Proposed Development of a Sludge Hub Centre and Leachate Treatment Facility at Derrinnumera

Waste Inputs for Proposed Development of a Sludge Hub Centre and Leachate Treatment Facility at Derrinnumera		
Waste Type	Tonnes per Annum	EWC Code ²
Waste Water Treatment Sludge	24,731 tpa	19 08 05
Water Treatment Sludge	7,846 tpa	19 09 02
(Include for sludge from LTF itself)	289 tpa	19 08 12
Landfill Leachate	500 m ³ /day (max.)	19 07 03

1.8 ARTICLE 12(L)(H)

Specify the raw and ancillary materials, substances, preparations, fuels and energy, which will be utilised in or produced by the activity:

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

For inspection purposes only.
 Consent of copyright owner required for any other use.

² European Waste Catalogue Codes

Table A1.3: Estimation of Raw Material, Substances, Preparations and Energy Requirements for Proposed Facilities

Estimation of Raw Materials, Substances, Preparations and Energy Requirements for Proposed Facilities			
Material/Resource	Sludge Hub Centre	Leachate Treatment Facility	Comments
Hydraulic Oil	c. 3,650 litres/annum	c. 1,000 litres/annum	Exact quantities not available at present
Electricity	Power Consumption not available at present until processes and technologies to be used are outlined*	Power Consumption not available at present until processes and technologies to be used are outlined	Electricity usages will include pumps and aeration systems in leachate treatment and powering permanent sludge drying plant and dewatering presses* (including small quantity for domestic usage).
Diesel	Interim sludge drier will be diesel fuelled	Diesel unlikely to be used as fuel for this facility	Quantities not available at present, bunded storage area will be provided
Water	Water usage not available at present, cooling water will be required for drying process**	Water usage not available at present	Main usage is likely to be domestic usage within SHC Administration Building of c. 1000 m ³ /annum

* It is anticipated that natural gas will be the main fuel source for the permanent sludge drier. The consumption rate is unavailable at present. The potential to use landfill gas as an auxiliary fuel shall be investigated, and used if found feasible and cost effective, subject to regulatory requirements. Microturbine options that generate power and heat from natural gas shall also be considered in the context of the overall heat balance and energy requirement of the Hub Centre.

** Water used for cooling will be recycled insofar as possible.

1.9 ARTICLE 12(L)(I)

Describe the plant, methods, processes, ancillary processes, abatement, recovery and treatment systems and operating procedures for the activity:

It is proposed to develop two facilities, i.e. a Sludge Hub Centre (SHC) and a Leachate Treatment Facility (LTF) as one individual contract at the site of the Derrinnumera Landfill Facility. The facilities will be developed as a Design Build and Operate Contract, with both facilities being developed and operated by a single private contractor. The whole facility will be covered by a single planning approval and waste licence, with Mayo 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.

1.9.1 Sludge Hub Centre (SHC):

The Sludge Hub Centre will be constructed and operated under contract for the collection, drying, temporary storage and sustainable re-use or disposal of treated municipal sludge collected from wastewater and water treatment plants throughout County Mayo. The method of production of bio solids will be subject to assessment of tenders, however the most probable option will be thermal drying, with sludge composting as a second facility. 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.

It is proposed that the Sludge Hub Centre will be fenced off at the existing Derrinnumera Landfill Site, and it is envisaged that the Sludge Hub Centre will accept an estimated 27,844 tonnes per annum on start-up. This figure has been estimated to rise to 32,580 tonnes per annum (sewage sludge and waterworks sludge) by 2020. These sludge quantities take into account sludges arising from wastewater and water treatment plants in County Mayo at the expected tonnages when entering the SHC.

For the sludge treatment process both a sludge-drying unit and a tunnel composting system is proposed. The most likely treatment outcome is that 80% of the sludge intake will be treated by the permanent sludge drier and 20% of the intake will go to the composting facility. The principal elements involved in the SHC at Derrinnumera will include:

- Sludge Reception and Handling;
- Sludge Thickening and Dewatering;
- Permanent Sludge Drier;
- Tunnel Composting System;
- Interim Sludge Treatment (may be required prior to commissioning of Permanent Sludge Drier); and
- Finished Product Transportation.

1.9.1.1 Sludge Thickening and Dewatering:

It is expected that a small amount of sludge will be imported as liquid sludge to the SHC, from smaller treatment plants, the remainder will arrive at the SHC as sludge cake. The dewatering system will produce a dewatered sludge with a minimum dry solids content of 17.5% or within a suitable range above this point consistent with the landfill licence. The proposed dewatering system will be provided complete with a fully enclosed dewatered sludge handling system.

1.9.1.2 Permanent Sludge Drier:

To the extent that this is a Design Build Operate Contract, the appointed Contractor will have relative freedom in designing the drying process units that he feels are most appropriate for the project in terms of economic design from both the constructional and operational perspective. There are many variants of thermal driers, but all require energy input to release the molecular entrained water. 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.

The sludge drier will be capable of providing a minimum 90% DS final product in a 2-5mm hard round pellet form. Atmospheric emissions from such a drying system would be required to comply with TA Luft 2002 requirements.

Biosolids produced from the drying of sludge arising from wastewater treatment plants will have a beneficial re-use as fertiliser to be transported off-site and landspread.

The SHC will be required to dry waterworks sludge (along with surplus sludge generated from the leachate treatment process itself) on a batchwise basis (separately from municipal wastewater treatment plant sludge) in order to minimise the end volume of sludge and to improve stability and handleability. This dried sludge will then be placed on the adjacent landfill.

1.9.1.3 Tunnel Composting System:

To the extent that this is a Design Build Operate Contract, the appointed Contractor will have relative freedom in designing the composting process units that he feels are most appropriate for the project in terms of economic design from both the constructional and operational perspective. An in-vessel composting system, such as tunnel composting, hangar composting or container composting, is best suited amongst biological treatment options for the treatment of municipal sludge. Of the in-vessel composting technologies, the tunnel composting system is the most efficient, reliable and flexible. A typical tunnel composting facility 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.

The main features of a tunnel composting system would be:

- Composting tunnels, usually constructed with reinforced concrete;
- The dimensions of each tunnel are typically 30m in length, 6m in width and 6m in height;
- The front end of each tunnel typically comprises an air-tight retractable steel door;
- A concrete aeration floor, through which air is blown, is installed underneath each tunnel, with aeration channels embedded in the concrete floor. These channels would also collect any leachate and process water;
- An air blower/ventilator would be installed at the back of each of the composting tunnels, to supply air to the individual aeration floors of each of the tunnels. The ventilators feed the aeration floors via channels connected through the concrete retention wall;
- An air collection duct would be installed over the middle of the compost in the tunnels to collect the process air. The collected air would be fed to an air treatment system, i.e. air scrubber and biofilter.

The compost can be either utilised on-site for landscaping and restoration purposes, or bagged for re-sale.

1.9.1.4 Interim Sludge Treatment:

The Council wish to include within the review, the option to temporarily relocate to Derrinnumera, an existing interim sludge drying/lime-dosing system, (currently located at Ballina WWTP), should the need arise for a short term fallback, prior to commissioning of the SHC permanent plant. This temporary plant would be retired upon commissioning of the Sludge Hub Centre permanent plant.

The interim plant would be approximately 4 to 5 years old and would consist of initial lime dosing by auguring of slaked lime into dewatered sludge cake at 11-12% DS. The lime/sludge mixture would then be passed through a diesel-fuelled drum drier, with temperatures varying from 180°C to 400°C. The residence time in the drier would be approximately ten minutes.

The final dried sludge/lime product typically reaches a dry solids content of up to 65% DS, with a lime content of 10% expressed by wet cake weight. It can be reused as a cover material and as a soil supplement to encourage vegetation on earthen embankments at the Derrinnumera Landfill. It would be intended to carry out this practice for the interim period.

1.9.1.5 Dried Product Handling and Storage:

Dried product will be cooled and stored in a safe manner in dried product storage silos or equivalent ground bins. The dried product storage capacity shall be at least equivalent to one week's production at average throughput rates. Dried product will be transported off site either in bulk, or in bagged form. A bagging unit shall be provided adjacent to the dried product storage area, linked to the storage bins or silos by means of conveyors.

The design of the SHC and ancillary works shall be in accordance with Best Available Techniques (BAT) and shall be such as to facilitate the operation, monitoring, sampling and maintenance of all processes and equipment. The process and equipment chosen shall have been used successfully in similar sized plants treating similar type sludges.

The SHC and ancillary works shall be designed and constructed in accordance with best national and international practices, and shall be operated to the requirements set out in the Contract Documents.

1.9.2 Leachate Treatment Facility (LTF):

Mayo County Council wish to include leachate treatment in the scope of the DBO Contract at the proposed SHC. As this is a Design Build and Operate (DBO) project, the exact nature of leachate treatment processes or technologies will emerge from the procurement process and thus have yet to be agreed.

The contractor will be required to design, build and operate a suitable and complete secondary and tertiary treatment system. The following process options will be considered for effective treatment of the leachate.

- Air stripping/aeration in lagoons or SBR processes;
- Reed beds;
- Rotating biological contactors;
- Membrane filtration;
- Chemical precipitation;
- Electrolytic oxidation;
- Reverse osmosis;
- Other proven systems.

The tendering contractor will offer the system that he considers to be the most economically advantageous, and which consistently achieves the required treated leachate standards.

However, no leachate treatment process will be acceptable from the procurement process that is not based on proven technology. A process based on proven technology is defined as a process which:

- Has been demonstrated to have at least three (3) years satisfactory use at reference sites with stable process conditions;
- Has been employed successfully on at least three leachate treatment plants of similarly sized loadings and modules as proposed, treating a similar effluent to that of Derrinnumera and achieving the effluent standards required;

For the leachate treatment process the EIS describes a sequencing batch reactor (SBR), since activated sludge processes work well with this type of leachate, but it shall include further polishing such as precipitation or membrane technology in order to achieve the required standards.

The design of the LTF and ancillary works, including any such elements of the existing leachate handling works as are retained, shall be in accordance with Best Available Techniques (BAT) and shall be such as to facilitate the operation, monitoring, sampling and maintenance of all processes and equipment. The process and equipment chosen shall have been used successfully in similar sized plants treating similar type leachates. The LTF and ancillary works shall be designed and constructed in accordance with best national and international practices, and shall be operated to the requirements set out in the contract documents.

To ensure that the optimal process control is maintained, monitoring equipment and sampling facilities shall be provided. The influent flow from the leachate lagoon and effluent from the leachate treatment works shall be monitored and automatically sampled as specified. Sampling facilities (for “grab” samples) shall be provided after every process step in the liquid stream and in the sludge stream.

All contaminated stormwater from the waste acceptance area, and runoff from the circulation roads and hard surfaces, which is not to be discharged to the surface water system around the landfill, and has been designated as ‘grey water’ by the EPA, shall be included in the leachate collection system.

The DBO Contractor will be expected to manage the balancing capacity of the lagoon and holding tanks, so as to permit any necessary priority to be given to such stormwater flows as the pumping stations that handle it may require. On the basis of water balancing of the landfill, the leachate volume

to be treated has been calculated at 500m³ as a daily maximum. The contractor will be required to provide an appropriate volume of storage on-site, which will also allow any leachate discharges to tankers in the event of process failure or planned maintenance downtime of the Leachate Treatment Facility.

It is proposed to deliver the treated leachate to the outfall of the proposed Newport WWTP via a pumped rising main on the selected route shown on Drawing No. 1908-2403. The treated leachate pipeline will terminate at the head manhole on the outfall of the Newport WWTP treated effluent discharge. The pipeline will be constructed in 200mm Nominal Diameter HPPE or HDPE, and will be laid in trench in the road margin over most of its route.

It should also be noted that it is not proposed that leachate be treated in the proposed Newport Waste Water Treatment Plant as appropriate treatment facilities will be provided at Derrinnumera Leachate Treatment Facility in accordance with Environmental Protection Agency requirements enforced through the Waste Licence for the landfill.

1.10 ARTICLE 12(L)(J)

Provide information for the purpose of enabling the agency to make a determination in relation to the matters specified in paragraphs (a) to (g) of section 40(4) of the act:

All aspects of the management of the Derrinnumera SHC and LTF will be committed to the principle of 'Best Available Techniques (BAT).

The facilities at the SHC and LTF will be operated in accordance with the relevant EPA BAT Guidelines and the following operational principles will apply:

- All waste handling operations will take place on hardstand areas;
- All equipment will be manufactured to the highest modern standards by a reputable manufacturer, incorporating elements such as a high degree of power efficiency and noise abatement;
- Each facility will be kept clean at all times and there will be regular checks for any evidence of litter outside all the main buildings;
- All the foul wash water generated during daily activities, i.e. daily cleansing of the hardstand areas, will be collected and either discharged following attenuation and interception or will be diverted to the foul sewer,
- The site will landscaped in a manner appropriate to the area; and
- The facility will be consistent with the objectives of the 'Replacement Waste Management Plan for the Connaught Region 2006-2011';

1.11 ARTICLE 12(L)(K)

Give particulars of the source, location, nature, composition, quantity, level and rate of emissions arising from the activity, and where relevant, the periods during which such emissions are made or are to be made:

1.11.1 Emissions to Surface Water:

The development of the proposed SHC and LTF will result in additional stormwater run-off generation from the impermeable surfaces on the site. This will result in increased run-off to drainage. The total impermeable area of the proposed development is unknown (this will be established under the DBO Contract), however, it is likely that much of the proposed area will be paved. Surface run-off from roads and hardstandings within the facility will be fed through a grit tap and petrol/oil interceptors. The runoff will then be diverted through settlement lagoons prior to outfall to the surface water drainage network.

1.11.2 Emissions to Groundwater:

There will be no emissions to groundwater as a result of operations at the proposed SHC and LTF.

1.11.3 Noise Emissions:

The nature and scale of the proposed development is such that noise emissions will arise during daytime from a number of fixed and mobile sources. In addition, there will be noise emissions arising during night-time from certain items of equipment, including the LTF.

The final design and the operation of the proposed SHC and LTF will proceed with regard to the need to mitigate noise emissions. However, the overall development is unlikely to cause any significant noise impact at any noise sensitive location. Provision of the mitigation measures outlined in the EIS will ensure the proposed development will proceed with negligible noise impact to the surrounding community.

There will also be noise emissions generated from the traffic delivering sludge, etc. to the various facilities on-site and from bringing materials off-site.

1.11.4 Dust Emissions:

The construction of the SHC and LTF has the potential to create a problem in relation to dust emissions. Wind blown dust emissions may arise during the construction phase of the proposed developments, although given the significant distance of at least 1km to the nearest dwelling, it is envisaged that there will not be a negative impact on these residents. Mitigation measures implemented during the construction phase will ensure that there will be no significant dust emissions.

During the operational phase, dust emissions will be negligible due to the nature of the materials to be handled and the fact that material handling will take place indoors.

1.11.5 Odour Emissions:

An odour impact assessment was carried out using latest odour measurement techniques. Five scenarios were chosen to estimate the worst-case potential odour impact from the current/proposed Derrinnumera Site.

In summary of the assessment, a worst-case odour-modelling scenario was chosen to estimate worst-case odour impact from the proposed site. Results from the modelling confirm that, provided best practice techniques are employed at the proposed facility, no significant odour impact will be perceived in the vicinity of the operated Derrinnumera site, with all residents perceiving an odour concentration of less than $1.0 \text{ Ou}_E \text{ m}^{-3}$ for 175 hours in a worst-case meteorological year. It is predicted that identified residents will perceive an odour concentration of between $0.1 \text{ Ou}_E \text{ m}^{-3}$ and $0.7 \text{ Ou}_E \text{ m}^{-3}$ for 175 hours in a worst-case meteorological year. In accordance with odour annoyance criterion (as detailed in Section 4.7 of the EIS), and in keeping with current recommended odour annoyance criterion in this country, the Derrinnumera proposed site operations will in all likelihood not lead to odour nuisance.

1.11.6 Emissions to Sewer:

It is proposed that Derrinnumera effluent and landfill leachate will undergo its complete treatment at the LTF prior to discharge to the outfall of the proposed Newport WWTP. The Derrinnumera final effluent will combine with Newport WWTP final effluent prior to discharge to the proposed Newport WWTP outfall location.

The nature of the final emission to the receiving water is dealt with in both the accompanying EIS (Section 4.4) and in the Newport Sewerage Scheme EIS, which has been published in parallel with this application.

The maximum volume of treated leachate to be discharged per day will be 500m³/d. The estimated volumetric contribution of the site emissions to the total volume to be discharged from the Newport combined outfall will be 47%.

1.12 ARTICLE 12(L)(L)

Give details and assessment of effects of existing or proposed emissions to the environment, including any environmental medium other than that into which emissions are made, or are to be made, and of proposed measures to prevent or eliminate or, where that is not practicable, to limit or abate such emissions:

1.12.1 Human Beings:

1.12.1.1 Effect of Traffic on Population: Construction Phase

The delivery of building materials will lead to an increase in traffic volumes during the construction of the facility, however the effects will be short term and will be similar in scale to any medium construction project.

The construction of a pumped rising main for transfer of treated leachate from Derrinnumera Leachate Treatment Facility to Newport will have a short-term impact on traffic patterns in the affected area.

1.12.1.1.1 Mitigation Measures:

Traffic management plans will be compiled in accordance with the requirements of the Chapter 8: Traffic Signs Manual, Department of Environment, 2006 to ensure the smooth and safe flow of traffic along the pipeline route.

In the interests of avoiding interruptions in traffic flow the Contractor will be required to phase the works so that a maximum of 100m of pipework can be constructed at any one time. Complete Road closures will not be permitted, and access will be maintained at all times for private entrances and business premises affected by or adjacent to the works.

1.12.1.2 Effect of Traffic on Population: Operational Phase

The main concerns regarding the operation of the proposed development is the increase in traffic volumes at the site and on the adjoining road network. However, a reduction in HGV traffic must also be considered due to the future discontinuity of tanker transport of leachate from the site with the introduction of the Leachate Treatment Facility. As the current landfill has been in existence for over three decades, the proposed Sludge Hub Centre should not unduly impact on the population, especially when the distance to the nearest habited dwelling is taken into account (1km).

1.12.1.2.1 Mitigation Measures:

Overall, it is expected that the decrease in HGV traffic will effectively cancel out any increase in HGV traffic volume, thus preserving the present traffic situation at Derrinnumera.

1.12.1.3 Possible Effects of Sludge Transportation Vehicles on Population

The transportation of sludge to the site has the potential to impact on the population as a result of spillages of dewatered sludge from vehicles.

1.12.1.3.1 Mitigation Measures:

In order to combat this licensed contractors will transport the sludge to the site using vehicles that are sealed, roadworthy and that meet the relevant standards for sludge transport vehicles.

1.12.1.4 Impacts on Agriculture and Landuse

The proposed development, during its construction and operational phases will have no impact on any agricultural lands, as the development is to be located on the site of the existing landfill and land use in the immediate area is deemed negligible. The impacts of the proposed development have the potential to be significant, in a worst-case scenario, as a result of fugitive emissions.

Mitigation Measures:

Current landfill activities do not adversely affect farming operations. The treatment facility will be operated under best practice guidelines at all times so that negative impacts shall not be felt in the surrounding areas as a result of the development.

1.12.1.5 Effects on Amenities and Tourism

The proposed development has the potential to impact negatively on the amenities and tourism in the area, though; there is no major tourist attraction within 9km of this development. The nearest walking route is located 3km from the site. The current landfill however has been in operation for over three decades and has not impacted on the popularity of this walking route.

1.12.1.5.1 Mitigation Measures:

The on-site surface water collection system limits the potential of pollution to the associated water channels. Therefore the amenities at Beltra Lough and Newport River will not be impacted upon.

Since the proposed Sludge Hub Centre and Leachate Treatment Facility is to be sited at the existing landfill site behind Cell 1, the visual impact of the proposed development will not cause any significant impact.

1.12.1.6 Effects on Traffic and Construction Traffic on Property

The main potential impacts on dwelling houses will occur during the construction phase of the development from increases traffic and related noise. However traffic increases will be negligible due to the constant history of landfill activity, construction and capping over the last few years at this site.

In relation to the possibility of devaluation of residential and other properties adjacent to the site it is concluded that, when the development is built and operated in accordance with the proposed plans, that any adverse impact on the overall value of the property in the area will be negligible.

1.12.1.6.1 Mitigation Measures:

The visual impact of the proposed Sludge Hub Centre and Leachate Treatment Facility at the existing landfill site is also limited due to its location behind Cell 1.

1.12.1.7 Safety and Security

On site impacts regarding the health and safety of this proposed development, relate primarily to concerns about individuals either straying or trespassing into the subject area. In the case of workers and visitors to the site, the day to day operation of this development, including any activities associated with site machinery and on-site vehicles, and additionally how visitors are to present and conduct themselves when engaging with the proposed SHC and LTF, will be undertaken in compliance with all health and safety legislation pertaining to such.

Health and safety concerns also relate to treated leachate pipeline construction along the R311 public carriageway.

1.12.1.7.1 Mitigation Measures:

The proposed SHC and LTF will be designed, constructed and operated in accordance with in accordance with relevant health and safety legislation. Site Specific Health and Safety Plans shall be provided and adhered to for both construction and operational phases in accordance with relevant legislation.

Fencing shall be put in place around the proposed Sludge Hub Centre and Leachate Treatment Facility so as to maximise safety and security at the site. Only people depositing sludge or involved in monitoring or otherwise authorised by Mayo County Council will be permitted to enter the SHC or LTF site. Access to the site outside of normal operational hours is not permitted unless specifically authorised and supervised by Mayo County Council.

Prior to the commencement of the pipeline construction works the Contractor will be required to provide detailed traffic management plans, compiled in accordance with the requirements of Chapter 8: Traffic Signs Manual, Department of Environment, 2006 (or any subsequent amendments thereof).

In the interests of public safety, all appropriate traffic control and safety measures will be put in place and maintained on a continuous basis, i.e. traffic cones, traffic cylinders, temporary traffic signage and lighting. The Contractor will be required to appoint a Traffic Safety and Control Officer to liaise with the Gardai and put into immediate effect any traffic measures considered necessary to ensure the safety of the public.

1.12.2 Ecology

1.12.2.1 Development Site:

The Sludge Hub Centre and Leachate Treatment Facility will be constructed at the Derrinnumera landfill in an area that has been cleared of vegetation and potential habitats, therefore the potential impact on flora and fauna is negligible. The proposed development will be in the catchment of the Newport River cSAC, however, during operation there will be no release of pollutants, siltation or leachate to watercourses in the area. Therefore indirect impacts on the cSAC will be very unlikely with appropriate water quality control measures in place.

Consideration will be given to avoidance and reduction of impacts on the ecological environment at all stages, however, as with all development, some degree of impact is inevitable.

1.12.2.1.1 Mitigation Measures:

Detailed mitigation measures are set out in order to lessen the potential impact, which will include appropriate handling, storage and treatment of all hydrocarbons used during the construction stage, surface runoff from roads and hard standings, leachate, and silt-laden runoff, thus avoiding potential adverse impacts on watercourses. In periods of warm weather, the spraying of insecticides may augment fly control, however this will be carried out using best practice techniques and kept to a minimum at all times.

The Sludge Hub Centre and Leachate Treatment Facility are to be located in the grounds of an existing landfill thus mitigating against the need to construct the development in a green field site. There will be no removal of trees or other areas of semi-natural habitat during construction.

1.12.2.2 Pipeline Construction

Pipeline construction impacts on ecology will include habitat disturbance due to trench excavations. Apart from a relatively short length of hedgerow along the route, there are no hedgerows or tree lines of note. None of these habitats are of significant conservation value and disturbance by the development is rated as an impact of Minor significance.

The Newport River cSAC is an important site for the pearl mussel (*Margaritifera margaritifera*) and the Atlantic salmon, species that are listed on Annex II of the EU Habitats Directive. Other important species such as otter and kingfisher also occur. As pollution incidents during construction could affect the food supplies of these important species, suitable mitigation measures to counteract this occurrence will be enforced.

1.12.2.2.1 Mitigation Measures:

If disturbance of any of the ground between the Newport River and existing road this sensitive area is necessary, works will be strictly supervised by an ecologist. Any native species disturbed during pipeline construction shall be replaced with a similar species (probably mostly hawthorn and ash), whilst non-native species such as sycamore should be replaced with ash or oak. Banks and ditches that are disturbed shall also be re-instated.

During the construction phase, strict pollution control measures will be taken to prevent run-off or other pollutants from entering the Newport River and potentially affecting the food supplies of otter and kingfisher, and to prevent potential run-off from reaching the three small lakes close to the R311 (Doogan Lough, Tully Lough, Cuilmore Lough).

Given that the extent of the pipeline proposed to run along the Newport River (up to 1.5km), and the fact that it coincides with the main concentration of the mussel population, all reasonable efforts will be made to keep the pipeline trench as great a distance as possible from the bankside of the Newport River. Where this is not possible, the contractor will be required to provide proposals for stringent siltation prevention along the pipeline route and to provide contingency planning in regards to the risk attached to pipe laying as regards siltation episodes.

Where the pipe crosses the river, it is intended to sleeve the pipe with a larger diameter pipe laid beneath the riverbed, with the sleeve terminating in a chamber on each side of the river. Consultations will be undertaken with the National Parks and Wildlife Service in advance of this construction. It is proposed an ecologist will strictly supervise that river crossing works.

1.12.2.3 Treated Leachate Pipeline Operation:

In terms of risks associated with the treatment of the leachate, and transfer of treated leachate to the outfall, these risks can be broadly categorised as follows:

- Power Failure or Mechanical Failure at the Leachate Treatment Plant or at Newport WWTP;
- Bursting or blockage of the treated leachate pumped pipeline;
- Accidental damage to the treated leachate pumped pipeline;
- Low-level leakage from the pipeline.

(a) *Power Failure or Mechanical Failure:*

In terms of mechanical reliability, or in the event of a power failure, raw leachate collected from the unlined waste-body (below the lined cells) will continue to flow to the lagoon as it does at present. Similarly, leachate pumps, which would normally lift leachate from wells within the lined cells directly to the treatment plant, will automatically shut down, allowing leachate levels to temporarily accumulate within the cells, which is permitted to a depth of 1 metre on the base liner. A suitable emergency valved bypass facility (to be installed) will intercept any leachate, which has to be pumped to remain within this temporary storage constraint. Intercepted leachate will then flow gravitationally to the lagoon for storage. The lagoon will be kept drawn down as its' normal condition, so that this storage capacity will be available when needed.

The Lagoon pumps will not lift leachate for treatment on power failure, and neither will the treated leachate pumps deliver into the pipeline, while power supplies are out. A SCADA signal on power failure will in any case prevent the treated leachate pumps at Derrinnumera starting up. Equally, in the event of power interruption at the municipal treated effluent pumps at Newport WWTP, a SCADA signal will prevent the treated leachate pumps at Derrinnumera starting up. Therefore, for the duration of a power or mechanical failure at either treatment plant, treated leachate will not be pumped to Newport, and balancing facilities will be utilised in Derrinnumera to accommodate this leachate.

(b) *Bursting or blockage of the treated leachate pumped pipeline:*

The leachate treatment process will have a clarification phase as a minimum and may also include a filtration stage. The risk of blockage of the treated leachate pipeline is therefore small. Nonetheless it will be equipped with Scour Valves at the lowest points of its longitudinal section, with the scour discharge taken into sealed offline chambers from which scoured washdown of the line would be removed by tanker.

The impacts associated with bursting of the treated leachate pumped pipeline, would result in an accidental release of treated leachate to the surrounding lands and watercourses and at worst case entering Newport River, which is a water supply source for Newport Village and its environs. Treated Leachate in this pipeline will already meet standards as described below. Mitigation measures for this risk are outlined below.

(c) *Accidental damage to the treated leachate pumped pipeline:*

Accidental damage to the treated leachate pipeline again could also result in an accidental release of treated leachate. Mitigation measures for this risk are outlined below.

(d) *Low-level leakage from the pipeline:*

It is possible that low-level leakage could also occur as a result of minor accidental damage to the pipeline, short of a visually noticeable burst. This would lead to an accidental release of treated leachate to the surrounding environment. Mitigation measures for this risk are outlined below

The treatment of leachate being discharged into Clew Bay will be to an appropriate standard based on limits specified in Irish legislation. The design philosophy has been to comply with the Urban Waste Water Treatment Regulations, 2001 and to otherwise treat the leachate such that the environmental quality standards specified in the Water Quality (Dangerous Substances) Regulations, 2001 and European Communities (Quality of Shellfish Waters) Regulations, 2006 are already attained in the pipeline prior to discharge to the receiving environment. The Environmental Protection Agency have a key role in establishing discharge standards for the treated leachate at Derrinnumera landfill as part of the Waste Licence review which is currently being conducted.

The accidental release of a leachate, which has been treated to these very high standards, would have a minimum impact on the environment into which it leaks. Nonetheless it is very important to ensure that accidental releases of treated leachate does not occur, therefore numerous mitigation measures will be put in place along the entire route of the pipeline

A Pipeline Construction Methodology was prepared as a proposed mitigation measure to prevent against potential impacts from treated leachate pipeline construction and operation. The methodology includes such elements as: the isolation of pipeline sections for leakage detection purposes; the use of marker posts and marker tape, which will be responsive to electronic detection equipment, used at the surface to locate the position of the pipeline (this would alert any machine driver as to the presence of the pipeline, it would also prevent accidental misinterpretation of it as a watermain or other service); sleeving of pipelines where the pipeline crosses a stream or river to prevent accidental release of treated leachate to watercourses, etc.

Welding of pipelines to be carried out by specialist pipeline welders, each certified as competent to do this work, under controlled conditions.

In terms of pipeline bursting, this would be evident from the change in pressure conditions as experienced at the pumping station for any burst which occurred close to that station, if it were not evident by visual means near the burst site. In accordance with normal flow monitoring at both Derrinnumera and Newport, two flow meters will be installed on the pipeline, one at the treated leachate pumping station at Derrinnumera, and the other immediately prior to the combined outfall at Newport WWTP. In the case where there is a detected instantaneous difference in flow-rate, greater than 15%, showing up on the two flow meters, (thus indicating a possible significant loss of leachate along the pipeline route), an investigation to determine the cause of this deviation will be carried out immediately and an automatic shutdown facility will be immediately triggered. Similarly, if the sum of the daily bulk

flows differs from meter to meter by more than 10% on any one day, this will again warrant an immediate investigation. The treated leachate pipeline would be a continuously welded pipeline, pressure tested at the time of its construction, and before being commissioned to carry treated leachate. If low-level leakage were subsequently suspected, the pipeline can be divided into convenient lengths for testing purposes by closure of valves along it, in a sequential manner, until the section unable to sustain a test pressure is identified. If it is found that a leakage of leachate is the probable cause for these anomalies in flow readings, step testing of the pipeline between valve chambers will be undertaken to identify the location of the leak. Again the lagoon at the headworks would provide sufficient balancing capacity to interrupt the discharge, repair the burst or leak, and if necessary mobilise tankers to transport the treated leachate on a temporary basis to the Westport Main Drainage system.

1.12.3 Impacts on Soil, Geology and Hydrogeology:

Removal of peat, unconsolidated subsoils and some bedrock is deemed necessary to facilitate construction of the proposed Sludge Hub Centre and Leachate Treatment Facility, which will be a direct and permanent effect. However, this is not considered to be a significant negative impact.

Mitigation Measures:

Any water ingress encountered by removal of subsoils and bedrock during the construction phase will be intercepted and diverted to an existing drainage channel.

Permanent groundwater monitoring wells exist at the landfill site; from which routine sampling will be carried out during both the construction phase and the operational phases to ensure that no adverse impact occurs that is associated with its development.

1.12.4 Impacts on Water (Development Site):

1.12.4.1 Construction Phase - Runoff from Development Site

During the construction phase of the proposed development, it is likely that peat washings and a high content of suspended solids will be added to the drainage channels that drain the subject site. This is not considered to be a significant negative impact as the drainage channels flow to a settlement pond prior to discharge to the Glaishty River, enabling settlement of any peat washings and suspended solids prior to discharge. Furthermore this impact is short-term and temporary, during the construction phase only.

1.12.4.2 Groundwater/Surface Water Resource Protection

The proposed development would have potential to cause groundwater and surface water contamination from vehicular fuel spillages and accidental sludge spillages on the sludge reception area, or from potential spillages from material storages on site.

1.12.4.2.1 Mitigation Measures:

The proposed development is to be founded on a concrete hardstand and it is proposed that any surface water runoff on the concrete hardstand area will be diverted to the existing surface water collection network to ensure that no contaminants discharge from the site. It is not envisaged that implementation of the proposed development will have any increased impact on the quality of the underlying groundwater resources.

1.12.4.3 **Stormwater Runoff**

The development of the proposed Sludge Hub Centre and Leachate Treatment Facility will result in additional stormwater runoff generation from the impermeable surfaces on the site. However, it is likely that much of the proposed development will be paved. This will reduce the amount of effective rainfall infiltrating the soil and bedrock aquifers.

1.12.4.3.1 Mitigation Measures:

This is a direct, long-term effect but is not considered to be a significant negative impact given that there is an existing stormwater management system at the landfill site that can accommodate this additional runoff. Stormwater collected from roofs can be collected and used as process water in the operations of the proposed Sludge Hub Centre.

1.12.5 *Impacts on Water (Proposed Pipe-Laying)*

1.12.5.1 **Construction Phase – Pipe-laying of Treated Leachate Rising Main**

The provision of a treated leachate rising main between Derrinnumera Leachate Treatment Facility and Newport WWTP combined outfall will involve a pipe-crossing of the Newport River in a location upstream of Newport Town, along with the pipe-crossing of several streams on route. In addition, there are a number of small loughs, which, although will not be directly affected by excavation works, are in close proximity to the pipeline route. The primary impact associated with pipe laying is the potential occurrence of silt pollution events.

1.12.5.1.1 Mitigation Measures:

Stringent mitigation measures will be put in place for the prevention of such an event. During the construction phase, strict pollution control measures will be taken to prevent run-off or other pollutants from entering the Newport River, and to prevent potential run-off from reaching the three small lakes close to the R311 (Doogan Lough, Tully Lough, Cuilmore Lough).

1.12.5.2 **Potential Impacts from Accidental Spillages/Breakages of Treated Leachate Pipeline**

As stated in the 'Treated Leachate Pipeline Operation' in the Impacts on the Ecology Section of this document, the impacts associated with bursting, blockage or accidental damage to the treated leachate pumped pipeline, would result in an accidental release of treated leachate to the surrounding lands and

watercourses and at worst case entering Newport River, which is a water supply source for Newport Village and its environs.

1.12.5.2.1 Mitigation Measures:

A risk assessment with mitigation measures for the proposed transfer of treated leachate to the outfall at Newport is provided in the *Impact on Ecology Section*.

1.12.6 *Impacts on Water (Proposed Outfall from Leachate Treatment Facility):*

1.12.6.1 Potential Impacts on Receiving Waters from Marine Discharge of Treated Leachate

The discharge of a treated leachate to the marine environment in inner Newport Bay has the potential to impact negatively on the surrounding habitats and species. The results of the impact could include the loss of species and their habitats, with the contamination of water, sediment and biota. Given the environmental significance of the receiving environment, the mitigation strategy that will be adopted to protect that environment and its inhabitants will be through the adoption of adequate discharge standards in the leachate treatment process.

The treatment of leachate being discharged into Clew Bay will be to an appropriate standard based on limits specified in Irish legislation. The design philosophy has been to comply with the Urban Waste Water Treatment Regulations, 2001 and to otherwise treat the leachate such that the environmental quality standards specified in the Water Quality (Dangerous Substances) Regulations, 2001 and European Communities (Quality of Shellfish Waters) Regulations, 2006 are already attained in the pipeline prior to discharge to the receiving environment. The Environmental Protection Agency have a key role in establishing discharge standards for the treated leachate at Derrinnumera landfill as part of the Waste Licence review which is currently being conducted.

In addition to the monitoring requirements for the treated leachate as specified by the Environmental Protection Agency in the Waste Licence for Derrinnumera landfill, biannual monitoring of the receiving waters, sediment, fish and shellfish at a matrix of sites adjacent to the proposed discharge and other representative sampling stations moving away from the discharge will be implemented to safeguard the ecological integrity and in particular the favourable conservation status of the receiving environment in the short, medium and long-term. The development and implementation of this monitoring programme will be conducted in consultation with the relevant state and semi-state bodies (i.e. Environmental Protection Agency, Department of the Environment, Heritage and Local Government and the Department of Communications, Marine and Natural Resources [including the Marine Institute]) with input from local stakeholders.

It should be noted that the results of this Monitoring Programme will be forwarded to the Environmental Protection Agency for consideration as part of their Waste Licence enforcement activity at Derrinnumera Landfill.

Ultimately the Environmental Protection Agency will establish the discharge standards for the leachate being discharged from Derrinnumera landfill and outline monitoring frequencies as part of the Waste Licence Review process, which is currently on going.

1.12.7 Impact on Air (Noise Emissions):

The nature and scale of the proposed development is such that noise emissions will arise during the daytime from a number of fixed and mobile sources of noise. In addition, there will be noise emissions arising during nighttime from certain items of equipment, including the leachate treatment facility. The final design and the operation of leachate treatment facility and Sludge Hub Centre will proceed with regard to the need to mitigate noise emissions.

Mitigation Measures:

During the construction stage of the development all plant and machinery used on site will comply with the EC (Construction Plant and Equipment) Permissible, Noise Level Regulations.

With regard to transportation noise, road vehicles will comply with the EC (Construction Plant and Equipment) Permissible, Noise Levels Regulations. Traffic noise from the leachate treatment facility and Sludge Hub Centre will not give rise to any nuisance or significant impact, however, simple mitigation measures (such as good maintenance; switching off idling machines and avoiding unnecessary revving of engines) will help to minimise any potential impacts.

1.12.8 Impact on Air (Dust Emissions):

Dust emissions have the potential to adversely impact the environment and amenity of the lands surrounding the proposed Sludge Hub Centre and Leachate Treatment Facility. Potential sources of dust include those arising during the construction phase of the proposed developments from stockpiles of construction materials, that dispersed from construction vehicles, as well as generation of dust from the handling of the dried bio solids product.

Mitigation Measures:

To mitigate impacts of dust dispersion during the construction phase the following will be put in place; a wheelwash at the entrance to the facility to prevent dust dispersion from vehicles exiting the site, spraying of access routes and other exposed areas during periods of dry weather, vegetation of stockpiles and embankments immediately following placement to reduce the surface area open to the environment.

Overall there will be no anticipated impact from dust emissions during the operation phase of the proposed development, though a complaints register will be maintained on site to deal with any complaints should they arise.

1.12.9 Impact on Air (Odour Emissions):

Odour emission rates were calculated using Olfactometry data. The predicted overall odour impact of the following five scenarios was calculated to determine the potential odour impact of the proposed development:

- Existing landfill operation assuming input capacity
- Existing landfill operations (maximum capacity) and proposed leachate treatment on site utilising SBR diffuse fine bubble aeration
- Existing landfill, leachate treatment and operation of existing proprietary engineered diesel fuelled sludge drier situated in Castlebar WWTP
- Existing landfill, leachate treatment and operation of new sludge drying system (generic at this stage of development)
- Existing landfill, leachate treatment and proposed tunnel composting system.

A worst-case odour-modelling scenario was chosen to estimate worst-case odour impact from the proposed site. Results of the modelling scenario indicated that no significant odour impact would be perceived in the vicinity of the operated Derrinnumera site for scenarios 1 to 5. In keeping with current recommended odour annoyance criterion in this country, the Derrinnumera site operations will be unlikely to cause odour nuisance.

1.12.10 *Effects on Climate:*

No potential impacts are expected on the local climate of the area. Carbon dioxide resulting from the bioconversion of bio waste is not considered a net contributor to greenhouse gas emission, since the carbon is stored in the biomass for a limited number of years, whereas in the case of fossil fuels the carbon is stored for millions of year. Therefore, there will be no net contribution to greenhouse gas emission, thus aiding efforts to reach the targets set out by the Kyoto Protocol.

The effects of climate change are not considered relevant with regard to existing and future landfill operations at Derrinnumera, as when the noticeable effects of climate change on rainfall begin to occur, landfill cells will already be sealed off from the atmosphere, and leachate generation will no longer be dependent upon rainfall patterns.

The development of the Sludge Hub Centre and Leachate Treatment Facility will result in additional stormwater runoff generation from the impermeable surfaces on site. This is not considered to be a significant impact as additional stormwater will be collected and used as process water or will be diverted to the existing stormwater management system on site which is capable of handling such an amount of additional runoff. (Refer to Section 4.4.4)

1.12.11 *Impacts on Existing Landscape:*

The proposed Sludge Hub Centre and Leachate Treatment Facility are to be located on the western side of the existing landfill site, adjacent to Cells 1 and 2, and behind the existing civic amenity site and site accommodation building. The principal visual impact of the overall site and proposed development is on the Newport/Castlebar Road (R311) to the south. This road constitutes a popular tourist route; therefore there is potential for significant negative visual impact on the landscape. However, because the proposed facility will be effectively masked by the existing landfill cells and site infrastructure from views from the R311 to the south, it is anticipated that the visual impact will be negligible.

1.12.12 *Material Assets (Road Infrastructure and Traffic):*

Future traffic volumes will vary as a net result of the following:

- Increased traffic due to importation of sludges to the Sludge Hub Centre
- Increased traffic due to the importation of fuel for the sludge drier
- Reduced traffic in discontinuing the tanker transport of leachate to Castlebar
- Increased traffic of employees and service vehicles associated with the Sludge Hub Centre
- Increased traffic associated with exports of bio solids from the Sludge Hub Centre.

The following table provides a summary of the estimated annual existing and proposed traffic movements to the Derrinnumera Landfill Facility.

Table 4.10 –Estimation of Existing and Proposed Traffic Movements to and from Derrinnumera Landfill Facility.

	Traffic In	Traffic Out	Total
Existing Traffic *			
Leachate Transportation	4,266	4,266	
Other HGVs	3,592	3,592	
Civic Amenity Traffic	65,097	65,097	
Sub-total	72,955	72,955	
Total traffic movements per annum (existing)			145,910
Future Traffic			
Leachate Transportation	0	0	
Other HGVs	3,592	3,592	
Civic Amenity Traffic	65,097	65,097	
Import Sludge Cake	2748	2748	
Import Liquid Sludge	639	639	
Import Drier Fuel	1	1	
Export Biosolids	397	397	
Additional Staff Vehicles	6	6	
Sub-total	72,480	72,480	
Total traffic movements per annum (future)			144,960

* (Based on latest counts from Derrinnumera On-site Records (2005))

It is envisaged that during the construction of the Sludge Hub Centre (SHC) and Leachate Treatment Facility (LTF), the volume of traffic is expected to increase slightly, however, the local road network is in good condition and will easily cater for the slight increase in traffic volumes.

Increased HGV movements will occur as a result of sludge importation to, and biosolids exportation from, the proposed facility. However, the discontinuation of tanker transport of leachate to Castlebar as a result of the proposed development, will in all likelihood cancel out any increases in HGV traffic at the site and may actually lead to a net decrease in the annual HGV movements to and from the site.

Therefore, it is not envisaged that the proposed SHC and LTF will result in any negative impacts on HGV traffic volumes.

The number of car movements at the site will increase by 12 movements per day due to the additional six staff, which will be required to run the SHC and LTF. Based on current car movements at the facility, this will lead to an approximate 6% increase in car movements. It is not considered that this minor increase in car movements will have a negative impact on the community.

1.12.12.1 Effect of Pipe-laying on Traffic

The construction of a pumped rising main for transfer of treated leachate from Derrinnumera Leachate Treatment Facility to Newport will have a short-term impact on traffic patterns in the affected area. Traffic management is a key issue for sewer construction in narrow rural roads and therefore will be a key issue for this element of the development. Traffic management plans will be compiled in accordance with the requirements of Chapter 8: Traffic Signs Manual, Department of Environment, 2006 to ensure the smooth and safe flow of traffic along the pipeline route. It is envisaged that the pipeline construction will have a very minor short-term negative impact on traffic patterns during the construction period.

1.12.13 Material Assets (Archaeological and Cultural Heritage):

The development of the Sludge Hub Centre and Leachate Treatment Facility will have no affect on the local cultural heritage. The archaeological sites found during the clearing of the borrow area (location of proposed development) have been logged and removed, and no other sites were found in the vicinity.

In terms of pipeline construction, the dedicated treated leachate rising main will not intercept any areas of archaeological interest or possible archaeological interest over its entire length, from the Derrinnumera Leachate Treatment Facility outfall to the Newport WWTP outfall.

With regard to the combined outfall pipeline, to be constructed from the Newport WWTP at Caulicaun to the final discharge location north of Rosmore, the crossing of an inter-tidal area between Caulicaun and Lisduff has the potential to impact on three identified known Recorded Monuments and Places (all within one area of constraint), therefore this crossing will be relocated north so that it is not within the area of archaeological constraint.

It is not envisaged that the proposed inter-tidal crossing will have a negative impact on the identified Recorded Monuments and Places, as the pipeline route will be relocated accordingly so that the tidal crossing will not be located within the area of archaeological constraint. As an additional mitigation measure, any section of the proposed rising that do not run through and alongside the existing road shall be field walked prior to the commencement of any works.

1.13 ARTICLE 12(L)(M)

Identify monitoring and sampling points and indicate proposed arrangements for monitoring of emissions and the environmental consequences of same:

All environmental monitoring will be carried out under the conditions of the revised waste licence for the facility issued by the EPA. Emission Limit Values (ELV) have/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, odour, 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 revised Waste Licence or due to the final operations to be carried out at the facility.

1.14 ARTICLE 12(L)(N)

Describe any proposed arrangements for prevention, minimisation and recovery of waste arising from the activity concerned:

An estimation of energy used or generated by the proposed activities is not possible at present, as the processes and technologies to be utilised are currently unknown given the DBO nature of the project.

The potential to use landfill gas as an auxiliary fuel shall be investigated, and used if found feasible and cost effective, subject to regulatory requirements. Microturbine options that generate power and heat from natural gas shall also be considered in the context of the overall heat balance and energy requirement of the Hub Centre.

Depending on the final contract, there may be a potential to produce electricity from Combined Heat and Power (CHP) plant in the Sludge Hub Centre.

1.15 ARTICLE 12(L)(O)

Describe any proposed arrangements for off-site treatment or disposal of solid or liquid wastes:

It is estimated that up to 1,412 tDS per year of waterworks sludges will be dried at the SHC. In accordance with the 'Management of Water Treatment Sludges' Circular, dated February 2005, the SHC will be required to dry waterworks sludges on a batchwise basis (separately from municipal wastewater treatment plant sludges) in order to minimise the end volume of sludge and to improve stability and handleability for disposal to landfill. A small volume of surplus sludge arising from the leachate treatment process will also be dried batchwise. In accordance with best environmental practice, dried waterworks and LTF sludges will be placed on the landfill at Derrinnumera.

1.16 ARTICLE 12(L)(P)

Describe existing or proposed measures, including emergency procedures, to prevent unauthorised or unexpected emissions and minimise the impact on the environment of any such emissions:

The Operators of the Sludge Hub Centre and Leachate Treatment Facility will be required to develop policies in relation to accident prevention and emergency response, depending on the treatment process to be used. Details of their policies will be agreed with the Agency prior to construction and operation, particularly in relation to the Leachate Treatment Facility. All facilities will have to comply with the latest Health & Safety Regulations.

In terms of the proposed facility, there are 6 contingencies that must be allowed for:

1. Operational failure of plant and equipment;
2. Industrial action by operational staff;
3. Untreated leachate discharge within or outside the site;
4. Accidental fuel spillage outside the bunded area;
5. Fire in the facility;
6. Any other event, which might pose a significant threat.

An Environmental Liabilities Risk Assessment for the facility will be drafted and agreed with the Agency.

1.17 ARTICLE 12(L)(Q)

Describe proposed measures for the closure, restoration, remediation or aftercare of the facility concerned, after the cessation of the activity in question:

It is the intention that the facilities at the Derrinnumera Sludge Hub Centre and Leachate Treatment Facility will continue in operation for the foreseeable future. An Environmental Liabilities Risk Assessment will be carried out and decommissioning plan written prior to commencement of operation at the site. Prior to commencement of operation, an Aftercare Plan will be developed.

1.18 ARTICLE 12(L)(R)

In respect of landfilling of waste, provide particulars of (i) such financial provisions as is proposed to be made by the applicant and (ii) such charges as are proposed or made:

This section is not relevant to the application.

1.19 ARTICLE 12(L)(S)

State whether the activity is for the purposes of an establishment to which the European communities (control of major accident hazards involving dangerous substances) regulations 2000 apply:

No, not applicable to this application.

1.20 ARTICLE 12(L)(T)

In the case of an activity which gives rise or could give rise to an emission to an aquifer containing list i and ii substances specified in annex to council directive 80/68/eec, describe existing/proposed arrangements necessary to give effect to articles 3, 4, 5, 6, 7, 8, 9 and 10 of the aforementioned council directive:

This section is not relevant to the application.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT B.1 OWNERSHIP PLAN

Please refer to Drawing No. 1908-2400.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT B.2

LOCATION OF ACTIVITY

Please refer to Drawing No. 1908-2401 : Site Plan.

Please refer to Drawing No. 1908 –2402 : Services Plan.

Please refer to Drawing No. 1908 –2405 : Location Map.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT B.3 PLANNING AUTHORITY

MOST RECENT PLANNING PERMISSIONS:

Please refer to **Appendix 1** for the following documents:

- **Application in Respect of Part X of Local Government (Planning & Development) Regulations 1994:** Remedial Works at Derrinnumera Landfill Site.
- **Application in Respect of Part VIII of Local Government (Planning & Development) Regulations, 2001:** Development of Borrow Pit adjacent to existing Site (Approved at Council meeting held on July 29th 2002).

A copy of the drawings pertaining to the above documents is available upon request.

MOST RECENT WASTE LICENCES:

EPA **Waste Licence No. W0021-01** (granted on 21st of December 1999) is the current waste licence in force at this present time. Waste Licence No. W0021-01 has included herewith as **Appendix 2**.

ENVIRONMENTAL IMPACT STATEMENTS:

A copy of the Environmental Impact Statement (required to accompany this application under Part III, Section 13 of the Waste Management [Licensing] Regulations, 2004) has been included herewith. This Environmental Impact Statement has also been sent to An Bord Pleanála for approval.

An Environmental Impact Statement, dated September 1998 was prepared, as part of the application for the above Waste Licence No. W0021-01.

ATTACHMENT B.4 SANITARY AUTHORITY

Mayo County Council will apply to the Water Services Department of Mayo County Council for a discharge licence under Section 16 of the Water Pollution Acts 1977-1990, in order to discharge trade effluent to the local authority sewer. This application is contingent of the granting of this Waste Licence Review for the facility by the EPA.

NAME AND ADDRESS OF THE WASTEWATER TREATMENT PLANT:

The implementation of an on-site Leachate Treatment Facility at Derrinnumera Landfill is subject to this Waste Licence Review. The Leachate Treatment Facility will cater for the treatment of raw leachate collected from the landfill waste body, all potentially contaminated stormwater from hard surfaces on site, which has been designated as 'grey water' by the EPA, and any additional loadings otherwise generated from any other operations on site such as excess process water from sludge drying and composting and supernatant arising from dewatering of smaller volumes of liquid sludge.

It is proposed that Derrinnumera effluent and landfill leachate will undergo its complete treatment at this proposed Leachate Treatment Facility. It is then proposed to pump the treated effluent from the Leachate Treatment Facility, via a pumped rising main, to the outfall of the proposed Newport Wastewater Treatment Plant.

The confluence point will be downstream of the Newport sewage treatment process but within the site boundary of the proposed Newport waste water treatment plant. It should be noted that leachate would not be discharged into the Newport town collection system. It should also be noted that it is not proposed that leachate be treated in the proposed Newport Waste Water Treatment Plant as appropriate treatment facilities will be provided at Derrinnumera Leachate Treatment Facility in accordance with Environmental Protection Agency requirements enforced through the Waste Licence for the landfill.

The Derrinnumera Leachate Treatment Facility final effluent will combine with Newport WWTP final effluent prior to discharge to the proposed Newport WWTP outfall location.

Please refer to Drawing No. 1908-2403 for the proposed Leachate Treatment Facility pumped rising main route and proposed Newport WWTP outfall location.

ATTACHMENT B.6 NOTICES AND ADVERTISEMENTS

Please find appended to this Attachment:

- A copy of the Site Notice (**Appendix 3**). (Please refer to Drawing 1908-2404, which illustrates the Site Notice location on site.
- Newspaper Advertisement (**Appendix 4**).
- Correspondence to An Bord Pleanála, notifying the Board of the application being made (**Appendix 5**).

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT B.7 TYPE OF WASTE ACTIVITY

The relevant activities to which this application relates as specified in the Third and Fourth Schedules of the Waste Management Acts 1996 to 2003 are detailed below.

The **principal activity** to be undertaken is covered by

Class 1 of the Third Schedule of the Waste Management Acts (1996 to 2003):

“Deposit on, in or under land (including landfill)”

- The application concerns the continued deposition of non-hazardous waste on land at the Derrinnumera landfill site. (*Status: previously licensed - ongoing works*);
- This also refers to the proposed landfilling of dried sludges arising from municipal water treatment plants and the proposed on-site leachate treatment facility. (*Status: Subject to Waste License Review – proposed works*).

The development is also covered under the following Classes:

Third Schedule, Class 4:

“Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.”

The application also relates to the following activities, which are to be carried out at the landfill site:

- The collection, temporary storage and pumping of landfill leachate to an onsite leachate treatment facility. It is proposed that Derrinnumera landfill leachate will undergo its complete treatment at this proposed Leachate Treatment Facility. The leachate treatment facility will also accept leachate produced from the sludge treatment process in the onsite Sludge Hub Centre (*Status: Subject to Waste License Review - proposed works*).
- The collection and discharge of surface water via sedimentation tanks, oil interceptors and surface water lagoons to adjacent streams (*Status: ongoing/proposed works*).

Third Schedule, Class 5:

“Specifically engineered landfill including placement into lined discrete cells which are capped and isolated from one another and the environment.”

The application also relates to the following activities, which have been/are to be carried out at the landfill site:

- The disposal of non-hazardous Waste into lined cells at the facility, (*Status: previously licensed - ongoing works*);

- The construction of a cut-off wall around the site to prevent groundwater intrusion into waste body, *(Status: previously licensed, works complete)*;
- The collection and pumping of leachate to a leachate treatment plant, *(Status: Existing Waste Licence W0021-01 already allows for the collection of leachate for subsequent removal for treatment at the Castlebar Sewerage Treatment Works. As part of this Waste Licence Review, an application has been made for the development of an on-site Leachate Treatment Facility at Derrinnumera (subsequent to the previous An Bord Pleanála planning condition to cease leachate imports at the upgraded Castlebar Sewerage Treatment Works.)*;
- A top cover of low permeability soil on completion of landfilling *(Status: previously licensed, future works)*;
- The collection and flaring of landfill gas *(Status: previously licensed, flare operational, ongoing works)*;
- Final shaping of the waste mound and planting to a landscape plan *(Status: ongoing / future works)*;
- This also refers to the proposed landfilling of dried sludges arising from municipal water treatment plants and the proposed on-site leachate treatment facility. *(Status: Subject to Waste Licence Review – proposed works)*.

Third Schedule, Class 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”

- The application includes for the treatment of leachate at the onsite leachate treatment facility. There will also be Sludge Hub Centre, which may utilise in-vessel composting for treatment of local authority sludge *(Status: Subject to Waste Licence Review - proposed works)*.

Third Schedule, Class 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)”

- As with Class 6 above, this application includes for the treatment of leachate at the onsite leachate treatment facility. There will also be Sludge Hub Centre, which may utilise sludge-drying technology for treatment of local authority sludge *(Status: Subject to Waste Licence Review - proposed works)*.

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 application also relates to the following activities, which have been/are to be carried out at the landfill site:

- The storage of waste at the existing civic waste facility for eventual disposal, as well as the storage of waste not acceptable for disposal at the landfill pending its dispatch from the site to an alternative disposal facility (*Status: previously licensed, ongoing works*);
- The application also provides for the temporary storage of unacceptable sludge in the sludge quarantine area pending its dispatch from the site to alternative waste disposal facilities (*Status: Subject to Waste Licence Review - proposed works*).

Fourth Schedule, Class 2:

“Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes)”

The application also relates to the following activities, which have been/are to be carried out at the landfill site:

- The reclamation of organic wastes within the civic waste facility (*Status: previously licensed, ongoing works*);
- The application provides for the composting of treated municipal sludge as a possible second facility to thermal drying of sludge (*Status: Subject to Waste Licence Review - proposed works*).

Fourth Schedule, Class 3:

“Recycling or reclamation of metals and metal compounds”

- The activity is limited to the reclamation of metals and metal compounds within the civic waste facility (*Status: previously licensed, ongoing works*).

Fourth Schedule, Class 4:

“Recycling or reclamation of other inorganic materials”

- This activity is limited to the reclamation of inorganic materials arising from the waste disposed at the civic waste facility (*Status: previously licensed, ongoing works*).

Fourth Schedule, Class 9:

“Use of any waste principally as a fuel or other means to generate energy”

- The application includes for the possible use of landfill gas or exhaust gases from the sludge treatment process as a fuel for the generation of energy. (*Status: Subject to Waste Licence Review - proposed works*).

Fourth Schedule, Class 10:

“The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system”

- The application includes for the use of a dried sludge product or compost as daily cover on the landfill or incorporated with soil and subsoil and used as final capping material or on earthen embankments at the Derrinnumera Landfill (i.e. as a soil supplement to encourage vegetation) (*Status: Subject to Waste Licence Review - proposed works*).

Fourth Schedule, 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”

- This activity is limited to the storage of wastes arising from the waste disposed at the civic waste facility for the purpose of recovery (*Status: previously licensed, ongoing works*).

For inspection purposes only.
Consent of copyright owner required for any other use.

ATTACHMENT C.1 TECHNICAL COMPETENCE AND SITE MANAGEMENT

The proposed management structure in Mayo County Council for the proposed Sludge Hub Centre and Leachate Treatment Facility is given in Figure No. C.1.

The proposed facility would be constructed and operated under a Design Build Operate (DBO) Contract. The management structure of this facility will be clarified with the Agency at a later date when a Contractor for the facility has been finalised.

The Site Manager and Site Operatives for the proposed facility shall have received previous training to an appropriate standard. The Site Manager and Site Operatives shall be obliged to attend, at appropriate intervals, Certified Training Programmes, such as those offered by the FAS Environmental Training Unit.

Given the nature of the Design Build Operate (DBO) Contract, the exact qualifications of personnel to be employed at the site are not known as of yet but the following guidelines will apply:

- Site Managers will be responsible for the day-to-day operation and supervision of each facility and will have received training in EPA waste acceptance and handling procedures, and in the Environmental Management of the proposed facility.
- Site Operatives, who will also have received training in waste acceptance and handling procedures, will be responsible for operating the facilities.

The Site Manager shall hold a copy of the following documents:

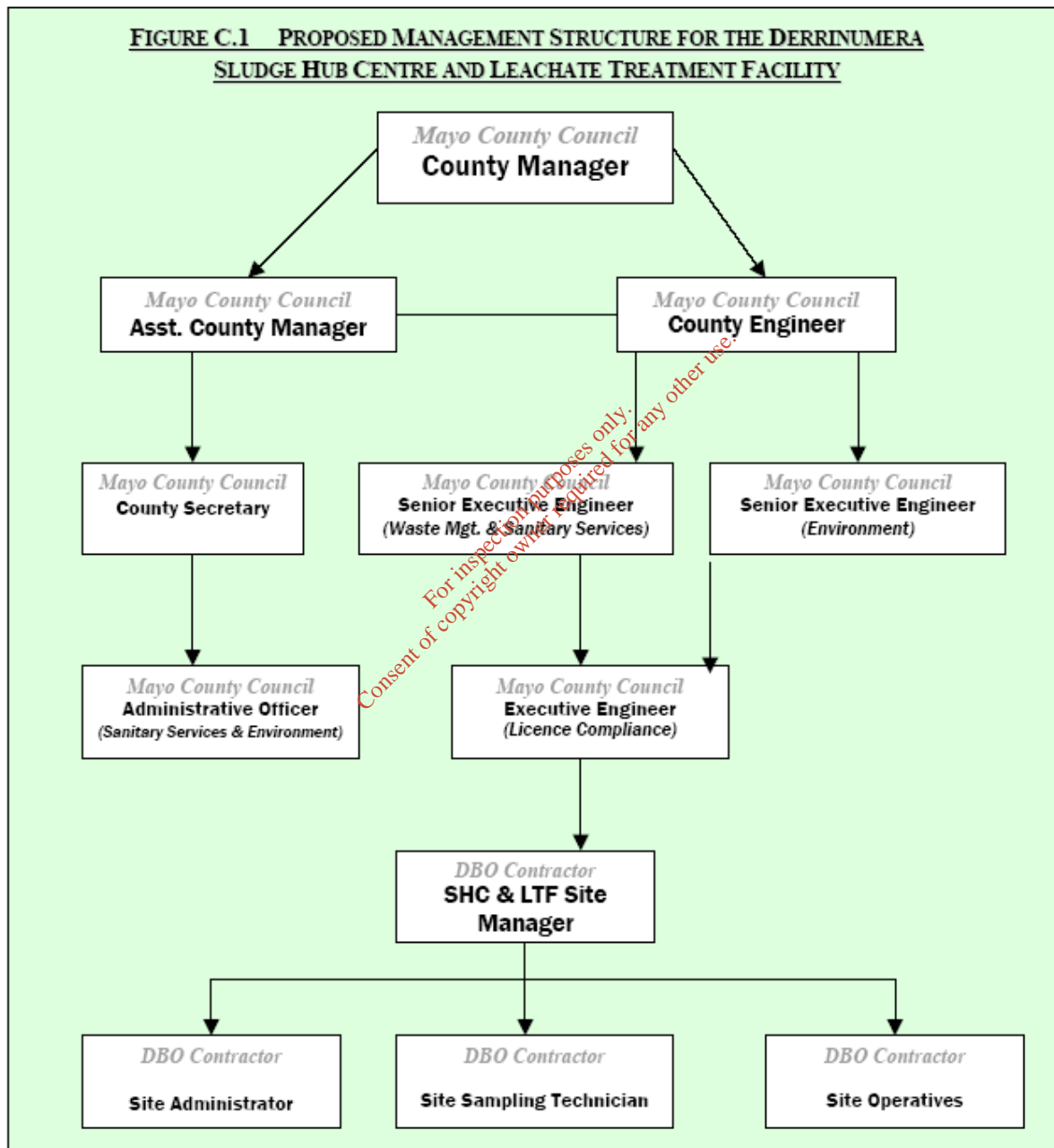
- Waste Licence (Review) Application;
- Waste Licence (Review) Conditions as set down by the EPA; and
- Facility Environmental Management Plan.

Training and awareness among facility staff shall be required to be achieved through external and in-house training as well as through prominent posting of environmental awareness material within the site buildings.

MAYO COUNTY COUNCIL COMHAIRLE CONTAE MHAIGH EO



**FIGURE C.1 PROPOSED MANAGEMENT STRUCTURE FOR THE DERRINUMERA
SLUDGE HUB CENTRE AND LEACHATE TREATMENT FACILITY**



ATTACHMENT C.2 ENVIRONMENTAL MANAGEMENT SYSTEM

MAYO COUNTY COUNCIL – ENVIRONMENTAL MISSION STATEMENT

“Protect the natural environment of the County and encourage appropriate renewal and development, while retaining the visual attractiveness of Mayo in accordance with the principles of sustainable and balanced development.”

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The Derrinnumera Sludge Hub Centre and Leachate Treatment Facility will have to establish and maintain an Environmental Management System (EMS) supported by the appropriate organisation and procedures as specified in EN ISO 14001:1996 Environmental Management Standards and the European Commission’s Eco Management and Audit Scheme (EMAS).

In establishing these systems, the main objectives will be:

- to develop an efficient and cost effective EMS, which compliments the EPA Waste Management Licence;
- to implement an EMS by reference to proposed procedures and systems;
- to achieve effective environmental risk management for each facility, having regard to existing and future environmental legislation;
- to provide a framework for establishing and reviewing environmental targets and objectives for each facility.

The EN ISO 14001 EMS will be based around the “Plan, Do, Check, Act” type management system, i.e.:

1. Plan what the facility is going to do;
2. Do it;
3. Check that they have done what they had planned to do;
4. Review what they have done and act to improve it; and
5. Go back to 1 with improvements in place.

The facility will achieve the management system through the following:

The “Plan” part of the system will be made up of the Environmental Policy Statement, along with the environmental aspects, legal and other requirements, objectives and targets and the Environmental Management Programme;

The “Do” part of the system will be made up of procedures relating to staff structure and responsibility, training, awareness and competence, communication, documentation and document control, operational control and emergency preparedness and response;

The “Check” part of the system will be covered by monitoring and measurement, non-conformance and corrective and preventative actions, records and the audit system;

The “Act” part of the system will be covered by the management review process.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT C.3 HOURS OF OPERATION

Hours of operation are dealt with in Section 3.6.1 of the EIS

PROPOSED HOURS OF OPERATION:

The processes involved in the Leachate Treatment Facility (LTF) will be continuous (24 hours per day; 7 days per week). The aeration of the composting process would also operate on a continuous basis (24 hours per day; 7 days per week). Both the LTF and composting process shall be computer controlled in the absence of an operator on-site.

Thus operation on these facilities will effectively be continuous. However, waste acceptance and handling will be restricted to the hours set out in (b) below.

PROPOSED HOURS OF WASTE ACCEPTANCE/HANDLING:

It is proposed that the Sludge Hub-Centre (SHC), with the approval of the Agency, will accept sludges 6 days a week from 8:00am to 6:30pm from Monday to Friday and from 8:00am to 2:00pm on Saturdays, and would normally be closed on Sundays and Bank Holidays, however the facility may be staffed for longer periods.

The drying and composting facility would only operate outside these hours when required to cater for the later arrival of sludge tankers or sludge skip vehicles due to breakdown or other exceptional circumstances. Sludge that is accepted at or near closure of operating hours would be unloaded in the acceptance area and stored overnight and handled during the next working day.

Maintenance may also be carried out outside operating hours.

PROPOSED HOURS OF ANY CONSTRUCTION AND DEVELOPMENT WORKS AT THE FACILITIES:

Construction activities will normally be restricted to between 7.00am to 19.00pm on weekdays. Evening and night-time working is not expected, although it is possible that limited 24 hour working may be required to meet specific demands, however, this would be subject to prior approval from the Agency.

ANY OTHER RELEVANT HOURS OF OPERATION EXPECTED:

There are no other relevant hours of operation known to date. Approval shall be sought from the Agency should any other relevant hours of operation become apparent, other than those hours listed above.

ATTACHMENT D.1 INFRASTRUCTURE AND OPERATION

The following sections should be read in conjunction with the EIS drawings included as Volume III in the EIS.

D.1.a Site security arrangements including gates and fencing:

Please refer to Sections 3.5.1; 4.1.3.7; and 4.1.4.1 of the EIS.

The main entrance to the SHC and LTF will be from the existing facility entrance off the R311. This will be a common entrance and traffic going to each facility will utilise it. There will be an access road running adjacent to the Leachate Treatment Facility and Sludge Hub Centre, which can be seen on Drawing No. 1908-2202 (Volume III – EIS). The site road will be adequately sign posted to direct traffic to the relevant facility.

The following site security facilities shall be provided at the proposed development:

- The site will be secured with a variety of security fencing, as shown on Drawing No. 1908-2202 (Vol. III – EIS). The existing security fencing will be extended to include the external boundary of the proposed SHC and LTF. The security fencing will be either palisade or chain-link fence, 2.4m in height;
- A security gate that will be locked outside normal operating hours.
- The premises shall also be fitted with CCTV to provide video monitoring at the site.

Mayo County Council, as the licence owners, will be responsible for the security of the overall site. The SHC and LTF operator will be responsible for their own facility security and their fencing will be generally as outlined above and will be detailed as part of the tendering process.

During the (waste acceptance) operating hours, Mayo County Council staff will supervise the main facility entrance. The process involved in the Leachate Treatment Facility (LTF) and composting process will be continuous. Outside waste acceptance hours, the main entrance gate will be locked, and monitored by CCTV.

D.1.b Designs for site roads:

Please refer to Section 3.5.1 of the EIS.

The sites roads will be extended to convey traffic from the site entrance/weighbridge to the proposed SHC and LTF.

Existing site roads from the junction with the R311 up to the existing waste sorting shed comprise a road base with a bitumen surface layer. Existing site roads beyond this point have been constructed with 75mm size hardcore stone laid 300mm deep on a geotechnical material on top of the original ground.

It is proposed that the access road from the waste-sorting shed to the LTF and SHC will be surfaced with a bitumen layer to a similar specification as the higher-grade site roads, with details to be agreed at tender stage. (Please refer to Drawing No. 1908-2203 (Vol. III – EIS).

D.1.c Designs for hardstanding areas:

Hard-standing areas on site shall be provided as follows depending on requirements:

- As per site roads (Attachment D.1.b above)
- In reinforced concrete slabs

The design of the hardstanding areas for the different facilities may be different and will depend on the final design of each facility. The final design of hardstanding area (including corresponding drainage designs) for each facility will be agreed with the Agency prior to construction of each facility. A generic example of the design of a concrete hardstanding area is given in Figure D.1.

Also, see Drawing No. 1908-2203 (Vol III – EIS).

*For inspection purposes only.
Consent of copyright owner required for any other use.*

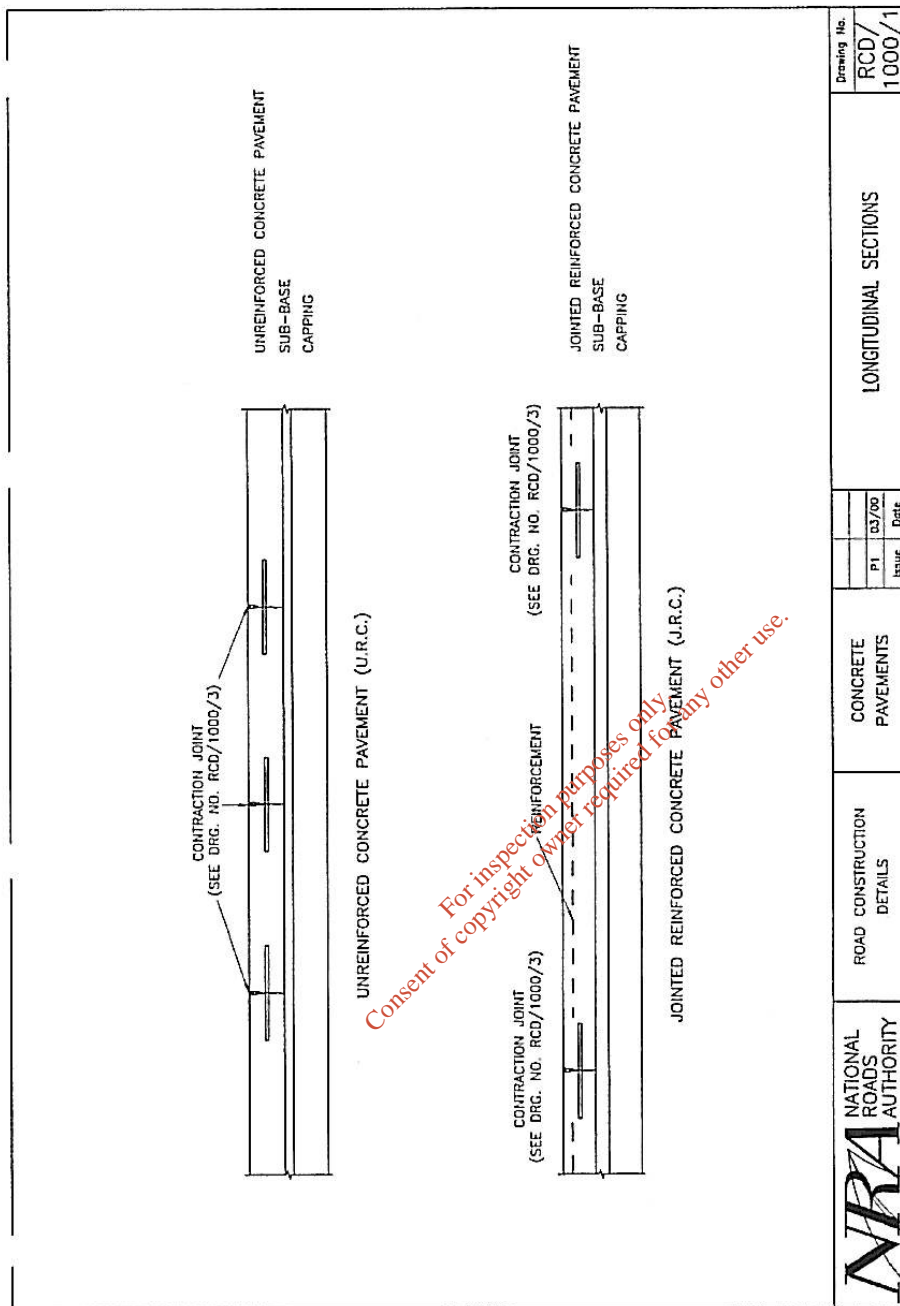


Figure D.1 Design detail of concrete hardstand

D.1.d Plant:

As this is a Design Build and Operate (DBO) project, the exact the exact nature of processes or technologies will emerge from the procurement process and thus have yet to be agreed. The type and amount of plant required for the proposed facility will depend on the final design of the facility. A generic description of typical plant to be used is provided in Section 2.3 of the EIS. The details of the plant required for the facility will be forwarded to the Agency for approval prior to construction of each component of the proposed facility.

A weighbridge has previously been installed as part of the existing landfill facilities. The existing weighbridge, currently being utilised by the existing landfill facility traffic, will be shared with the proposed development traffic. See Drawing No. 1908-2201 (Vol. III - EIS).

D.1.e Wheelwash:

Please refer to Sections 1.2.2; 3.2.6.2; 3.5.1 and 4.6.4 of the EIS.

A wheelwash has previously been installed as part of the existing landfill facilities. The existing wheelwash, currently being utilised by the existing landfill facility traffic will be shared with the proposed development traffic.

See Drawing No. 1908-2201 (Vol. III - EIS).

D.1.f Laboratory Facilities:

Please refer to Sections 3.5; 3.5.2; and 3.6.2 of the EIS.

Certified laboratories would normally carry out extensive analyses of leachate, waste and compost samples, off-site. The proposed control building will also be equipped with a small laboratory where basic parameters (e.g. dry solids, volatile solids, pH) can be measured, as part of the process control measures. A stove and a small oven for drying samples will form the main equipment, along with pH and temperature metres, a conductivity metre, etc.

D.1.g Design and location of fuel storage areas:

Please refer to Sections 1.2.3; 2.3.1.5; 3.2.5.2; and 3.2.5.4.8 of the EIS.

As the Interim sludge drying and lime stabilisation plant is diesel fuelled, a bunded fuel storage area will be provided. The fuel storage area shall be located within a bunded reinforced concrete hardstand area. The bunds shall be waterproof and shall be constructed to be of a capacity of 110% of the total tank volume.

The Derrinnumera site does not have a natural gas supply; consequently gas storage will be provided in a certified pressurised gas storage vessel(s), with adequate storage capacity to maintain the sludge drier in efficient operation between refills. The gas storage vessels will be located as agreed by the Fire Officer and the Agency.

All tank outlets shall be adequately secured by a locking mechanism to prevent vandalism. All fuel outlets shall be suitably ducted to delivery points.

All other fuel storage areas shall be adequately bunded to the agreement of the Agency. The exact nature of bunded fuel storage tanks will depend on the various processes to be utilised and will emerge from the DBO procurement process.

D.1.h Waste quarantine areas:

Please refer to Sections 2.3.1.1 and 3.2.6.4 of the EIS.

With regard to the waste quarantine facilities for the proposed development, a quarantine area for out-of-spec sludge shall be provided in the location of the Sludge Reception/Preparation area of the Tunnel Composting Facility. A secure container shall be provided within a secure reinforced concrete bunded area to prevent possible emissions to surrounding ground/surface water.

An experienced operator, who has received relevant training in waste acceptance, shall carry out the acceptance of deliveries. Any sludge identified, as not suitable following off loading at the relevant facility will be immediately removed to the waste quarantine area. The sludge will be stored in the quarantine area pending its removal off site. The facility operator will ensure that it is removed off site and disposed of at an appropriate facility as soon as possible.

The facility operator and Mayo County Council will maintain records of the waste type, quantity, and ultimate disposal/treatment facility. The exact location of the waste inspection and quarantine areas for the SHC has not been decided due to the DBO nature of the Contract.

D.1.i Waste inspection areas:

Please refer to Sections 2.3.1.1 and 3.2.6.4 of the EIS.

With regard to the waste inspection facilities for the proposed development, an inspection area for out-of-spec sludge shall be provided in the location of the Sludge Reception/Preparation area of the Tunnel Composting Facility. A secure container shall be provided within a secure reinforced concrete bunded area to prevent possible emissions to surrounding ground/surface water. Adequate site lighting shall be provided in the area to ensure proper inspection of the waste during hours of darkness.

The exact location of the waste inspection areas for the SHC has not been decided due to the DBO nature of the Contract.

D.1.j Traffic Control:

The DBO Contractor will share the existing weighbridge system at the site with the landfill operator. In addition to weighing the sludge going to the Sludge Hub Centre, the weighbridge will be used for weighing of any chemical or nutrient deliveries to the site.

Firstly, all vehicles, once they have passed the main entrance gate of the facility, shall arrive at a control barrier adjacent to the existing site office (See Drawing No. 1908-2201, Vol. III - EIS) where they can be charged and receive instructions on where to proceed with their waste if necessary. This initial control barrier also allows site operatives to temporarily restrict access if there should be a sufficient number of other users already using the facility. An adequate number of signs shall be positioned strategically around the site to direct users to each facility in a proper manner. Access to facilities shall be carried out in a queued formation controlled by the site operatives.

Adequate car-parking for employees of the proposed SHC and LTF shall be provided around the proposed facility control building, in accordance with the 'Mayo County Development Plan (2003-2009)' once the design has been finalised.

D.1.k Sewerage and surface water drainage infrastructure:

Sewerage Infrastructure:

Please refer to Sections 3.5.1 of the EIS

The existing site drainage network is illustrated on Drawing No. 1908-2402 – Services Plan. Due to the DBO nature of the proposed works, a detailed design of the proposed sewerage network is not yet available. The existing foul sewerage network will be extended to cover the proposed development.

All wastewater generated from the proposed development will be sent for treatment at the Leachate Treatment Facility. The LTF will therefore cater for:

- Raw leachate collected from the landfill;
- All potentially contaminated stormwater (run-off) from hard surfaces on site, which has been designated as 'grey water' by the EPA;
- Supernatant arising from dewatering of small volumes of sludge arriving as liquid sludge to the SHC;
- Excess process waters from the sludge drying process;
- A small volume of domestic wastewater from the proposed control building generated by approximately 6 staff (toilets, showers, sinks, etc.);
- Excess process waters from the composting process (majority of the process waters would be recycled in the composting system).

The daily loading to be sent for treatment to the Leachate Treatment facility is provided in Table 3.2.1 of Volume II of the EIS (maximum of 500m³/day).

A description of the proposed leachate treatment facilities and proposed discharge standards is provided in Section 3.4 of the EIS. The treated leachate discharge pipeline is detailed in Section 3.4.3.8 of the EIS with a route selection shown on Drawing No. 1908-2403.

Surface Water Drainage Infrastructure:

Please refer to Sections 3.4.3.1; 3.5.1; 4.2.4.1; 4.4.4.3 and 4.4.4.6 of the EIS.

The existing site drainage network is illustrated on Drawing No. 1908-2402 – Services Plan.

In summary of the EIS sections above:

- All potentially contaminated stormwater and runoff, from certain areas on site, which has been designated as 'grey water' by the Agency, shall be diverted to the foul water collection system for treatment at the LTF;

- Other surface water from roads and hardstandings will be fed through a grit trap and a petrol/oil interceptor, then onto a settlement lagoon, then sent onto the natural surface water drainage network (i.e. local watercourses);
- Settlement lagoons may be used in the event of accidental spillages on site for retention purposes, prior to be proper removal of contaminated water;
- During the construction phase, silt control measures will be implemented such as the construction of silt fences to be installed at the edge of the construction area to retain or filter runoff before discharge along with the use of sediment traps.

Due to the DBO nature of the proposed works, a detailed design of the proposed surface water diversion network is not yet available.

D.1.1 All other services

Existing site services are shown on Drawing No. 1908-2402 – Services Plan.

Refer to Section 3.5.1 of the EIS.

Power and Communications:

The existing facility currently has an electricity and telecom supply. A connection can be taken from this existing system to serve the proposed facility.

Water Supply:

As there is a restricted water supply at the existing facility at present, it is proposed to connect to the Islandeady Group Water Scheme (nearest sufficient supply) via a watermain extension. Refer to Section 3.5.1 of the EIS for details. This will also serve for the fire control infrastructure for the proposed development.

D.1.m Plant sheds, garages and equipment compound:

The number of plant sheds, garages and equipment compounds to be provided at the site is as follows, as shown on Drawing No. 1908-2202 (Vol. III – EIS):

- **Administration Building** (Control and Sludge Administration Building) including control room and storeroom as detailed on Section 3.5.2 of the EIS;
- **Maintenance Building** including storage areas and workshop as detailed on Section 3.5.3 of the EIS (position to be finalised during tendering process);
- **Sludge Drying and Handling Building** including sludge drying plant room, bagging plant room, wet sludge reception area, sludge belt press house, plant control room and storage. (Refer to Drawing No.s 1908-2205 to 2208, Vol. III – EIS);
- **Chemical storage area** as detailed in Section 3.5.4 of the EIS;

- **Flammable liquid storage** as detailed in Section 3.5.5 of the EIS.

The existing maintenance shed, located to the east of the proposed Sludge Drying and Handling Building will also be shared with the proposed development, as stated in Section 3.5.1 of the EIS.

D.1.n Site accommodation:

Proposed Administration (Control and Sludge Administration) Building:

The proposed Administration Building for the SHC is as located on Drawing No. 1908-2202 (Vol. III – EIS), and as detailed in Section 3.5 of the EIS.

Site accommodation will include a control room, reception, offices, meeting room, toilets, medical room, canteen, staff changing facilities and storerooms.

D.1.o A fire control system, including water supply:

Please refer to Sections 3.5.1 and 3.5.5 of the EIS.

The existing fire control infrastructure will be extended to service the proposed development. This will involve the installation of additional fire hydrants adjacent to the SHC and the LTF. The existing water supply will also be supplemented by connecting to the Islandeady Group Water Scheme as detailed in Section 3.5.1 of the EIS.

As recommended in the EPA Landfill Operational Practices Manual, the following additional fire prevention and control measures shall be provided on site:

- Training of all site operatives and employees in fire prevention and control;
- Prominent posting of emergency response contact numbers (fire service, police, ambulance and other agencies);
- The provision of on site water supply, water storage and portable water tanks;
- The provision of fire fighting equipment in the site office.

D.1.p Civic amenity facilities:

A civic amenity site was opened at the existing Derrinnumera Landfill Facility in July 2001, for the recycling and reclamation of materials (See Drawing No. 1908-2201, Vol. III - EIS). Waste Licence No. W0021-01, dated December 1999, has already dealt with the licensing of this facility.

This application for a review does not propose any alterations to the civic amenity facilities licenced on site. (Please refer to Appendix 2 for a copy of Waste Licence No. W0021-01).

D.1.q Any other waste recovery infrastructure:

Refer to Section 3.2 of the EIS (Sludge Treatment for the production of bio-solids and compost for the beneficial re-use as fertiliser).

D.1.r Composting infrastructure:

Refer to Section 3.2.6 of the EIS.

D.1.s Construction and Demolition waste infrastructure:

A civic amenity site was opened at the existing Derrinnumera Landfill Facility in July 2001 at the site, which allowed for the acceptance of construction and demolition waste for recycling. Waste Licence No. W0021-01, dated December 1999, has already dealt with the licensing of this facility.

This application does not propose any alterations to the civic amenity facilities licenced on site. (Please refer to Appendix 2 for a copy of Waste Licence No. W0021-01).

D.1.t Incineration infrastructure (if applicable). Provide information to fulfil Article 4 (2) & (3) of the Incineration of Waste Directive:

Not Applicable to this application

D.1.u Any other infrastructure:

Refer to Section 3.4 of the EIS (Leachate Treatment).

For inspection purposes only.
Consent of Copyright owner required for any other use.

ATTACHMENT D.2 FACILITY OPERATION

In Attachment D2 describe the plant, methods, processes and operations of the waste facility, as required by the *Guidance Note*.

Facility Operation

(a) A list of each unit process proposed to be carried out together with a plan of the site indicating the location of all activities and identifying all buildings and facilities:

For a list of each unit processes proposed to be carried out please refer to Section 3.2 and 3.4 of the EIS. Given the DBO nature of the proposed works, a generic plan of the site is provided by referring to Drawing No. 1908-2202 (Vol III – EIS).

(b) A flow diagram of the whole process along with a brief description detailing its management and maintenance plans:

As the proposed development will be carried out under a Design, Build and Operate (DBO) Contract, the design of the various processes for the different facilities will depend on the final design of each facility, therefore it would be impossible at this stage, to outline a flow diagram prior to the final design. The final design of the process for each facility will be agreed with the Agency prior to construction of each facility.

Proper and regular maintenance will be carried out on all mechanical equipment on site to ensure the equipment is in safe working order and does not pose a threat to health and safety of either facility employees or members of the public.

(c) Brief details on any aspects of the facility operation that can cause emissions to the environment during normal operation and also in the event of a malfunction or interruption of services. Further details of this aspect are required in Section E of the application.

Please refer to Section E of this application.

(d) Brief details of the activities carried out in laboratory facilities associated with the activity

The proposed control building will be equipped with a small laboratory where basic parameters (e.g. dry solids, volatile solids, pH) can be measured, as part of the process control measures for the Sludge Hub Centre. There will be a stove and a small oven for drying samples will form the main equipment.

With regard to process control measures for the Leachate Treatment Facility, the parameters to be analysed will include BOD, COD, Conductivity, Dissolved Oxygen, Ammonia, Phosphorus, etc. and the laboratory will be equipped accordingly. Groundwater and surface water analyses will be carried out on a periodic basis.

Portable instrumentation such as pH and temperature metres and conductivity metres, etc. will be retained on-site in the laboratory.

It should be noted that external certified laboratories would normally carry out extensive analyses of leachate, waste and compost samples, off-site, as required under the EPA Licence conditions.

- (e) For Incineration facilities (if applicable), provide information to fulfil Article 6 of the Incineration of Waste Directive.

Not Applicable to this application.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT D.4 LEACHATE MANAGEMENT

GENERAL:

Under the previous application for the original waste licence (W0021-01), the Agency has already dealt with the majority of issues listed on Table D.4.1 of the application form. Although this application (for a review of the waste licence) relates to an existing licenced landfill facility, the application does not require an extension of the existing landfill element of the facility, but wishes to retain its current licenced status of 40,000 tpa non-hazardous waste acceptance, therefore some of the issues are deemed not applicable as stated on Table D.4.1.

Condition 7.7.2 of Waste Licence W0021-01 states:

“Unless otherwise agreed in advance with the Agency, leachate shall be removed from the facility for treatment to the Castlebar Sewerage Treatment Works.”

Mayo County Council now wish to implement leachate treatment at Derrinnumera, in preparation for compliance with an An Bord Pleanála instruction to cease leachate imports to Castlebar WWTP.

The preferred alternative is to treat leachate on site at the proposed Leachate Treatment Facility, and pump the treated leachate to a confluence point with the discharge pipe from the proposed Newport WWTP. It is proposed to deliver the treated leachate to the Newport WWTP outfall via a pumped rising main on the selected route shown on Drawing No. 1908-2403. It should be noted that it is not proposed that leachate be treated in the proposed Newport Waste Water Treatment Plant as appropriate treatment facilities will be provided at Derrinnumera Leachate Treatment Facility in accordance with Environmental Protection Agency requirements enforced through the Waste Licence for the landfill.

D.4.e Has a leachate storage system been specified?

Currently leachate is balanced in a lined lagoon with a volume in the region of 3,600m³. This lagoon balances peaks in leachate production, which broadly mirrors rainfall. Leachate is pumped from this lagoon to three holding tanks from which tankers are filled through a gantry loading system. As stated above, the leachate is then taken off site to Castlebar WWTP for treatment.

Once the LTF has been commissioned, the maximum allowable discharge of treated leachate from the plant will be restricted to 500 m³ per day and the existing on-site lagoon will be utilised as a balancing facility when the daily leachate production exceeds this volume (refer to Section 3.3.2 of the EIS). The contractor will be required to provide an appropriate volume of storage on-site, which will also allow any leachate discharges to tankers in the event of process failure or planned maintenance downtime of the Leachate Treatment Facility (refer to Section 3.4.3.2 of the EIS).

D.4.i Has leachate treatment on-site been specified?

As stated above, Mayo County Council now wish to implement leachate treatment at Derrinnumera.

On-Site Leachate Treatment Systems:

- (a) Design and construction details of all lagoons including lagoon size and treatment plant, including details on normal and maximum capacity.

Please refer to Attachment D.4.e for lagoon size and design. Additional storage may be required to provide balancing for peaks or to allow for contingency for process failure or planned maintenance downtime. The final design for storage capacities, storage design, etc. will be decided at tender stage with agreement from the Agency.

For details on treatment plant design and design capacities, please refer to Sections 1.2.4, 3.3.2 and 3.4 of the EIS. The final design will be decided at tender stage with agreement from the Agency.

- (b) Proposals for removal of dissolved methane in leachate.

Methane stripping will be included in the leachate treatment process. The exact process design is unknown at present due to the DBO nature of the project, but this will be agreed with the Agency prior to construction.

- (c) Measures to minimise odour emissions from leachate (e.g. odour removal, good operational practices).

Refer to Section 4.7.4 of the EIS.

- (d) Details of proposed quality assurance.

The design of the LTF and ancillary works, including any such elements of the existing leachate handling works as are retained, shall be in accordance with Best Available Techniques (BAT) and shall be such as to facilitate the operation, monitoring, sampling and maintenance of all processes and equipment. The process and equipment chosen shall have been used successfully in similar sized plants treating similar type leachates. (Refer to Section 3.4.2, 3.4.3, 4.1.4.3 and 4.4.4 of the EIS for mitigation measures involving leachate treatment and discharge).

Mayo County Council will implement a Performance Management System to manage the performance of the selected contractor for the construction and operation of the proposed development. (Refer to Section 3.6.4 of the EIS).

Compliance monitoring will be undertaken, as per regulatory conditions and will be reported on, as part of the annual environmental report for the whole landfill site. These reports will be made available to all interested parties, which will allay public concerns as to the operation of the site and will result in a positive interaction with respect to human beings.

- (e) Details of emergency procedures in the event of the non-operation of any leachate control system shall be outlined including measures to establish the cause and extent of any significant environmental pollution.

For details on emergency procedures including measures to establish cause and extent of significant environmental pollution, refer to the following sections of the EIS:

Section 3.4.3 – Design philosophy for LTF for handling planned maintenance downtime, breakdown of plant or equipment failure;

Section 3.4.3.1 – System for managing excess stormwater flows;

Section 3.4.3.2 – Providing storage to balance leachate peaks or process failure of LTF;

Section 3.4.3.7 & 4.4.4.8 – Discharge standards and additional screening for receiving environment – for establishing ‘early warning limits’ in the receiving marine environment.

Section 4.2.2.1.4.1 – Risks and mitigation measures involved in leachate rising main pipe-laying.

Section 4.2.4.3.2, 4.4.3.5 & 4.4.4.7 – Risk assessment and mitigation measures for failure of LTF or treated leachate pipeline.

Section 4.4.4.3 – Measure for clean up of accidental spillages.

Also, refer to Attachment J.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT D.5 LANDFILL GAS MANAGEMENT

GENERAL:

Under the previous application for the original waste licence (W0021-01), the Agency has already dealt with the majority of issues listed on Table D.5 of the application form. Although this application (for a review of the waste licence) relates to an existing licenced landfill facility, the application does not require an extension of the existing landfill element of the facility, but wishes to retain its current licenced status of 40,000 tpa non-hazardous waste acceptance, therefore some of the issues are deemed not applicable as stated on Table D.5.

D.5.d Have gas alarm systems been installed in the site buildings?

Given the proximity of the proposed Sludge Hub Centre and Leachate Treatment Facility to the active landfill, a HDPE gas membrane will be incorporated into the floor construction of all proposed site buildings to act as primary protection in accordance with Protection of New Buildings and Occupants from Landfill Gas DOELG 1994. A gas detection, system incorporating wall mounted methane and carbon dioxide detectors and a central control panel, will be fitted into all proposed buildings by a supplier approved by the Engineer.

D.5g Is gas flaring undertaken at the site?

Gas flaring is undertaken at the site, which is licenced and operated under existing Waste License W0021-01 (Class 5 – Third Schedule, Waste Management Act, 1996).

D.5h Is there an active (i.e., pumped) landfill gas extraction system?

Yes, details of same submitted on an on-going basis to Agency.

D.5j Is landfill gas used to generate energy at the site?

Not at present, however the potential to use landfill gas as an auxiliary fuel for the sludge drying plant shall be investigated, and used if found feasible and cost effective, subject to regulatory requirements.

ATTACHMENT E.1 EMISSIONS TO ATMOSPHERE

This aspect is dealt with in Sections: 4.6 (Air: Dust); 4.7 (Air: Odour); and 4.8 (Climate) of the EIS.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT E.2 EMISSIONS TO SURFACE WATERS

Emissions to surface water are dealt with in Section 4.2 and 4.4 of the EIS.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT E.3 EMISSIONS TO SEWER

Emissions to sewer are dealt with in greater detail in Section 1.2.1, 3.4 and 4.4 of the EIS.

Tables E.3(i) and E.3(ii) have been completed for emission point 'SE1', which relates to the proposal to discharge treated leachate from the Derrinumera Leachate Treatment Facility to the outfall of the Newport WWTP.

The Application Guidance Notes require that the following information be provided:

a) On-site or off-site treatment envisaged:

The implementation of an on-site Leachate Treatment Facility at Derrinumera Landfill is subject to this Waste Licence Review. It is proposed that Derrinumera effluent and landfill leachate will undergo its complete treatment at this proposed Leachate Treatment Facility. It is then proposed to pump the Leachate Treatment Facility effluent, via a pumped rising main, to the outfall of the proposed Newport Wastewater Treatment Plant. The Derrinumera Leachate Treatment Facility final effluent will combine with Newport WWTP final effluent prior to discharge to the proposed Newport WWTP outfall location.

Please refer to Drawing No. 1908-2403 for the proposed Leachate Treatment Facility pumped rising main route and proposed Newport WWTP outfall location.

b) If for off-site: the name of the sewerage / WWTP undertaker and a copy of any agreement or permission by the undertaker to accept effluent:

Not applicable to this application.

c) Any further treatment of effluent by the undertaker, existing or proposed:

Not applicable to this application.

d) Any problems of sewage treatment associated with the proposed emission:

No problems envisaged for the proposed treatment.

e) Likely effects of the emission on sewer or sewage treatment maintenance operations:

No negative effects envisaged from the emission on sewer or sewage treatment.

f) Capacity, quality and integrity of the sewer:

Sewer has yet to be constructed, therefore it's capacity, quality and integrity will be designed with all proposed discharges in mind (including treated leachate discharge).

g) Likely effects of the emission on sewer integrity:

See point f) above.

h) Possible reactions of the emission with other effluent likely to be in the sewerage system.

No reactions envisaged due to high standard of treatment to be provided.

i) Nature of final emission to the receiving water and the estimated volumetric contribution of the site emissions to the total wastewater treatment plant Dry Weather Flow expressed as a percentage (% DWF).

The nature of the final emission to the receiving water is dealt with in detail in both the accompanying EIS (see Section 4.4 – Water and Hydrogeology and Appendix 3 of the EIS – The Marine Discharge of Treated Leachate) and in the Newport Sewerage Scheme EIS, which has been published in parallel with this application.

The design dry weather flow of the proposed Newport Wastewater Treatment Plant is 563 m³/d. The maximum volume of treated leachate to be discharged per day will be 500 m³/d. Therefore the estimated volumetric contribution of the site emissions to the total volume to be discharged from the Newport combined outfall will be 47 %.

ATTACHMENT E.4 EMISSIONS TO GROUNDWATER

Emissions to groundwater are dealt with in greater detail in Section 4.4 of the EIS.

A resource protection classification of LI/H (Locally Important Aquifer which is moderately productive only in local zones with high vulnerability) is assigned to the area surrounding the existing landfill site. It should be noted however, that there are no local groundwater abstractions in the area or downgradient of the proposed development.

Contaminants such as oils and hydrocarbons, concrete and cement products could enter the ground water through infiltration through the subsoil from spillages on the ground surface or through the base and sides of the excavations.

Groundwater quality at the site could be affected by accidental spillages of chemicals and fuels during the operation process.

Refer to mitigation measures in Section 4.4.4 of the EIS.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT E.5 NOISE EMISSIONS

The nature and scale of the proposed development is such that noise emissions will arise during daytime from a number of fixed and mobile sources of noise. In addition, there will be noise emissions arising during night-time from certain items of equipment, including the LTF.

The final design and the operation of the proposed SHC and LTF will proceed with regard to the need to mitigate noise emissions. However, the overall development is unlikely to cause any significant noise impact at any noise sensitive location. Provision of the mitigation measures outlined in the EIS will ensure the proposed development will proceed with negligible noise impact to the surrounding community.

Refer to Section 4.5 of the EIS, which deals with noise emissions in greater detail.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT E.6 ENVIRONMENTAL NUISANCES

BIRD CONTROL

The existing bird control measures currently in place will be extended to service the proposed development. The Site Manager shall inspect the proposed facility site and its immediate surrounds at weekly intervals to ensure that birds do not give rise to nuisance at the facility or the immediate area of the facility.

The majority of sludge delivery vehicles will contain sealed skips carrying sludge cake and the remainder will be bunded sludge tankers containing liquid sludge. Licensed contractors using vehicles that are sealed, roadworthy and meet the relevant standards for sludge transport vehicles will transport the collected sludge to the site, which will prevent the potential for nuisance by birds.

Methods used by for bird control will not cause environmental pollution.

DUST CONTROL

Please refer to Section 4.6.4 of the EIS.

FIRE CONTROL

Please refer to Sections 3.2.5.4.3, 3.2.5.4.8, 3.5.1 and 3.5.5 of the EIS.

The existing fire control infrastructure will be extended to service the proposed development. This will involve the installation of additional fire hydrants adjacent to the SHC and the LTF.

As recommended in the EPA Landfill Operational Practices Manual, the following additional fire prevention and control measures shall be provided on site:

- Training of all site operatives and employees in fire prevention and control.
- Prominent posting of emergency response contact numbers (fire service, police, ambulance and other agencies).
- The provision of on site water supply, water storage and portable water tanks.
- The provision of fire fighting equipment in the site office.

LITTER CONTROL

The Site Manager shall ensure that proposed Sludge Hub Centre and Leachate Treatment Facility will be kept tidy and free from litter at all times. With regard to litter along the approach road, it shall be a requirement that all vehicles entering and exiting the site shall be adequately covered and secured to prevent spillages. A general clean up will be carried out on a weekly basis at the proposed site. Monitoring of the proposed site and approach road to the site shall be carried out on a daily basis.

TRAFFIC CONTROL

Please refer to Section 3.2.5.5 of the EIS.

The DBO Contractor will share the existing weighbridge system at the site with the landfill operator. In addition to weighing the sludge going to the Sludge Hub Centre, the weighbridge will be used for weighing of any chemical or nutrient deliveries to the site.

Firstly, all vehicles, once they have passed the main entrance gate of the facility, shall arrive at a control barrier adjacent to the existing site office (See Drawing No. 1908-2201, Vol. III - EIS) where they can be charged and receive instructions on where to proceed with their waste if necessary. This initial control barrier also allows site operatives to temporarily restrict access if there should be a sufficient number of other users already using the facility. An adequate number of signs shall be positioned strategically around the site to direct users to each facility in a proper manner. Access to facilities shall be carried out in a queued formation controlled by the site operatives.

Adequate car-parking for employees of the proposed SHC and LTF shall be provided around the proposed facility control building, in accordance with the 'Mayo County Development Plan (2003-2009)' once the design has been finalised.

VERMIN CONTROL

Refer to Section 5.2 of the EIS. The existing vermin control measures currently in place will be extended to service the proposed development, (i.e. professional vermin control experts will be employed, if deemed necessary to ensure vermin activity is minimised). The Site Manager shall inspect the proposed facility site and its immediate surrounds at weekly intervals to ensure that vermin does not give rise to nuisance at the facility or the immediate area of the facility. Methods used by for vermin control will not cause environmental pollution.

ROAD CLEANSING

Details of litter control measures on approach roads are presented in the Litter Control section above. The existing wheelwash on site will be shared with the proposed development. Additional road cleansing procedures as deemed necessary by the site operatives would be carried out such as road spraying during periods of dry weather.

ATTACHMENT F.1 TREATMENT, ABATEMENT AND CONTROL SYSTEMS

TO ATMOSPHERE

Refer to Sections 4.6, 4.7 and 4.8 of the EIS relating to the mitigation measures to be employed to minimise any potential impacts of emissions on the environment.

SOIL

Refer to Sections 4.2 and 4.3 of the EIS.

TO SURFACE WATER/SEWER/GROUND(WATER)

Sections 4.2 and 4.4 of the EIS deal with the avoidance, remedial and reductive measures associated with reducing emission to surface water and groundwater.

NOISE

Refer to Sections 4.5 of the EIS

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT F.2- F9 MONITORING AND SAMPLING POINTS

The following sections describe the proposed monitoring programmes to be established under this review of Waste Licence No. W0021-01. Specific elements of monitoring may also be required during the construction and aftercare phases at the site and these requirements are also addressed.

All environmental monitoring will be carried out under the conditions of the Waste Licence for the facility issued by the Agency. Emission Limit Values (ELV) will be set by the Agency for many of the parameters to be monitored. Exceeding these values will be judged by the Agency to be a non-compliance with the Waste Licence.

The monitoring programme outlined below has been developed on the basis of the inclusion of the existing monitoring programme currently carried out under Waste Licence No. W0021-01 with additional monitoring required for the proposed development as specified in the EIS. The primary aims of this programme are to comply with legislation and the requirements of the Agency and to monitor the quality of the environment in the vicinity of the existing and proposed facilities and identify any adverse impacts from the proposed development.

As a condition of the Waste Licence, an Annual Environmental Report (AER) will be formulated that will collate and report all monitoring data each year. A comparative assessment will be made with data from previous years. This report will also be submitted to the Agency.

It should also be noted that the monitoring programme as outlined below may be changed by the conditions of the Waste Licence.

F2 AIR – TO INCLUDE DUST, ODOUR

Dust monitoring is already carried out at the existing facility under the conditions of Licence No. W0021-01. Bergerhoff gauges are used to determine total dust deposition, as specified in the German Engineering Institute VDI 2119 document "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)". Four gauges (D1, D2, D3, D4) were set up so that the glass jars were between 1.5m and 2m from the ground at three different locations as shown in Drawing No. 1908-2406.

The grid references of the four existing gauges are as follows:

Table F2.1: Existing Dust Monitoring Locations at Derrinnumera Landfill Facility

Existing Dust Monitoring Locations at Derrinnumera Landfill Facility	
Reference No.	Grid Reference
D1	E104224, N293398
D2	E104452, N293478
D3*	E104323, N293756
D4	E104590, N294073

* D3 to be relocated in the future with the agreement of the Agency.

It is proposed to continue the existing dust monitoring programme on site to include the Sludge Hub Centre and Leachate Treatment Facility. Due to the location of dust monitoring location D3 in the centre of the proposed SHC and LTF site, it is proposed to relocate D3 to a more suitable but nearby location on site. The new position of D3 will be agreed with the Agency prior to the relocation, when the design of the plant has been finalised.

It is proposed that dust monitoring will take place once per annum between the months of May and September during which period dust generation can be most problematic.

The facility shall be inspected on a daily basis for evidence of excessive generation of airborne dust. Operatives on site will carry out this inspection.

An Odour Management Protocol will be established at the proposed Sludge Hub Centre/Leachate Treatment Facility, (refer to Section 4.7.4 of the EIS). This will include for the establishment of odour monitoring locations for the proposed facility. It is envisaged at this stage that three (3) Odour Monitoring Locations will be established for the proposed Sludge Hub Centre/Leachate Treatment Facility. It is envisaged that odour monitoring will take place once per annum. The 3 Nr. odour monitoring locations may include: 1 Nr. fixed odour monitoring point, 1 Nr. up-wind odour monitoring location, and 1 Nr. down-wind odour monitoring location. The Odour Management Protocol and positions of the proposed odour monitoring locations will be agreed with the Agency, once the exact design of the proposed facility has been agreed.

F3 SURFACE WATER

Surface water monitoring is already carried out at the existing facility under the conditions of Licence No. W0021-01. Six surface water-monitoring locations (SW1 to SW6) were set up at the locations as shown in Drawing No. 1908-2407.

The grid references of the six existing surface water-monitoring locations are as follows:

Table F3.1: Existing Surface Water Monitoring Locations at Derrinnumera Landfill Facility

Existing Surface Water Monitoring Locations at Derrinnumera Landfill Facility	
Reference No.	Grid Reference
SW1 (on-site)	E104608, N293480
SW2 (on-site)	E104748, N294019
SW3 (off-site)	E105001, N296060
SW4 (off-site)	E105415, N297252
SW5 (off-site)	E104331, N297272
SW6 (off-site)	E104451, N292921

It is proposed to continue the existing surface water-monitoring programme on site to include the Sludge Hub Centre and Leachate Treatment Facility. It is proposed that the parameters and frequency will continue to follow those set out on Table F.4.1 of Waste Licence W0021-01.

It is intended that the analysis shall be carried out by a competent laboratory using standard and internationally accepted procedures. The testing laboratory and the testing procedures will be agreed with the Agency in advance of testing.

The analytical programme will be carried out such that an ion balance can be computed in accordance with an accepted standard such as the "Standard Methods for the Examination of Water and Wastewater", published by APHA, AWWA and WEF (1992, 18th edition). The ion balance will be within the industry standard accepted percentage error for normal groundwater.

It is also proposed to collate, tabulate and report the data including interpretation and comparison with the previous year's data. This information will be presented in the AER, which will also be submitted to the Agency.

In addition to the above a visual inspection of the surrounding surface water will be carried out on a weekly basis by site personnel to ensure that clay/mud/sand etc. is not impacting on the water quality during the construction phase.

In addition to the above surface water sampling to be carried out on and adjacent to the site, sampling will also be carried out on standing water from two chambers either side of a proposed sleeved river crossing of the LTF effluent rising main. (Please refer to Section 4.4.4.7 of the EIS.)

Post Closure Phase:

The post closure monitoring programme will be developed on the basis of the results of the monitoring programme over the remaining operating life of the landfill. The aim of the post-closure monitoring will be

- To comply with legislation and the requirements of the EPA;
- To quantify water quality in the vicinity of the facility and identify any adverse impacts; and
- To assess the performance of the perimeter leachate collection system.

The programme will consist of a minimum of twice a year sampling of surface water from upstream and downstream positions in the flow regimes. Water level measurements will be recorded in the wells and at available staff gauges at the same time of sampling.

The analysis data and interpretation of it will be included in an annual status report on the facility. Aftercare and monitoring of the facility once it has closed down would be agreed as part of the closing licence.

F4 SEWER DISCHARGE

Before effluent from the Leachate Treatment Facility leaves the site it will be sampled. The coordinates of this sampling location is unknown at present given the DBO nature of the proposed development, however, this future sampling location will be agreed in advance with the Agency. Section 3.4.3.7 (Treated Leachate Discharge Standards) and Section 4.4.4.8 (Marine Discharge of Treated Leachate) of the Environmental Impact Statement deals specifically with discharge standards and frequencies proposed for the Leachate Treatment Facility and associated discharge rising main. Ultimately the Agency may amend proposed discharge standards set out in the EIS and will be required to outline monitoring frequencies required for the treated leachate.

F5 GROUNDWATER

Groundwater monitoring is already carried out at the existing facility under the conditions of Licence No. W0021-01. Twenty three (23) groundwater monitoring locations (MW1A to MW28) were set up at the locations as shown in Drawing No. 1908-2408.

The grid references of the twenty three existing groundwater monitoring locations are as follows:

Table F5.1: Existing Groundwater Monitoring Locations at Derrinnumera Landfill Facility

Existing Groundwater Monitoring Locations at Derrinnumera Landfill Facility	
Reference No.	Grid Reference
MW1A	E104299, N293496
MW2D	E104530, N293924
MW2S	E104533, N293915
MW3	E104451, N293489
MW4D	E104681, N293998
MW4S	E104678, N293997
MW5	E104393, N293805
MW7	E104757, N293801
MW8D	E104640, N293828
MW8S	E104642, N293828
MW9	E104343, N293482
MW17	E104532, N293556
MW18	E104536, N293562
MW19	E104523, N293566
MW20	E104634, N293721
MW21	E104634, N293724
MW22	E104620, N293720
MW23	E104621, N293725
MW24	E104675, N293891
MW25	E104672, N293894
MW26	E104608, N293925
MW27	E104601, N293927
MW28	E104600, N293913

It is proposed to continue the existing groundwater monitoring programme on site to include the Sludge Hub Centre and Leachate Treatment Facility. It is proposed that the parameters and frequency will continue to follow those set out on Table F.4.1 of Waste Licence W0021-01.

Due to the location of monitoring point MW5 within the footprint of the proposed SHC and LTF site, it may be necessary to relocate MW5 to a more suitable but nearby location on site. If this is necessary, the new position of MW5 will be agreed with the Agency prior to the relocation, when the design of the plant has been finalised.

It is intended that the analysis shall be carried out by a competent laboratory using standard and internationally accepted procedures. The testing laboratory and the testing procedures will be agreed with the Agency in advance of testing.

The analytical programme will be carried out such that an ion balance can be computed in accordance with an accepted standard such as the "Standard Methods for the Examination of Water and Wastewater", published by APHA, AWWA and WEF (1992, 18th edition). The ion balance will be within the industry standard accepted percentage error for normal groundwater.

It is also proposed to collate, tabulate and report the data including interpretation and comparison with the previous year's data. This information will be presented in the AER, which will also be submitted to the Agency.

Post Closure Phase:

The post closure monitoring programme will be developed on the basis of the results of the monitoring programme over the remaining operating life of the landfill. The aim of the post-closure monitoring will be

- To comply with legislation and the requirements of the EPA;
- To quantify water quality in the vicinity of the facility and identify any adverse impacts; and
- To assess the performance of the perimeter leachate collection system.

The programme will consist of a minimum of twice a year sampling of groundwater from up-gradient and down-gradient positions in the flow regimes. Water level measurements will be recorded in the wells and at available staff gauges at the same time of sampling.

The analysis data and interpretation of it will be included in an annual status report on the facility. Aftercare and monitoring of the facility once it has closed down would be agreed as part of the closing licence.

F6 NOISE

Noise monitoring is already carried out at the existing facility under the conditions of Licence No. W0021-01. A total of four sampling positions were selected for noise monitoring (refer to Drawing No. 1908-2409), as set out in Waste Licence W0021-01.

Position N1: Located at the junction of the R311 and access road to the landfill site.

Position N2: Located at the extreme southwest corner of the landfill site, this position is representative of the southern and western boundaries.

Position N5: Located at the extreme north-western corner of the landfill, this position is representative of the western and northern boundaries of the site.

Position N6: Located along the R311 approximately 1,150 metres to the southwest of the southern boundary of the existing landfill site. This position is representative of the nearest dwelling house.

The environmental noise levels are determined using A-weighted network and fast-response. A Bruel and Kjaer Type 2260 Observer Noise Analyser is used. At each noise measurement point, the Sound Level Meter (SLM) is mounted on a tripod so that the microphone is maintained at 1.5 metres above ground level and at least 3.5 metres from any potential noise reflecting surfaces (other than the ground).

The following “A-Weighted” data are determined for each discrete sampling period:

L_{A10} The noise level equalled for 10% of the measurement period;

L_{A90} The noise level equalled or exceeded for 90% of the measurement period (This is taken to be representative of the ‘background noise’ level.);

L_{Aeq} The equivalent continuous A-weighted noise level for the measurement period. This is defined as the sound of a steady sound having the same energy as a fluctuating sound over a specified measuring period.

The grid references of the four existing noise monitoring stations are as follows:

Table F6.1: Existing Noise Monitoring Locations at Derrinnumera Landfill Facility

Existing Noise Monitoring Locations at Derrinnumera Landfill Facility	
Reference No.	Grid Reference
N1	E104262, N292893
N2	E104332, N293464
N5	E104584, N294077
N6	E103700, N293050

It is proposed to continue the existing noise monitoring programme on site to include the Sludge Hub Centre and Leachate Treatment Facility.

It is proposed that noise monitoring will continue to take place once per annum as specified in Licence No. W0021-01. Noise monitoring will be undertaken by suitably qualified persons. The results of noise monitoring undertaken at the facility and an interpretation of these results will be reported in the AER, which will be submitted to the Agency.

Post Closure:

Noise monitoring is not expected to be required following completion of all activities at Derrinnumera.

F7 METEOROLOGICAL DATA

Meteorological monitoring is already carried out at the existing facility under the conditions of Licence No. W0021-01. A small weather station was previously installed at the existing facility, which records precipitation, temperature, wind force and direction, evaporation, humidity and atmospheric pressure on a daily basis.

It is proposed to continue the existing meteorological monitoring programme on site to include the Sludge Hub Centre and Leachate Treatment Facility. The location of the existing weather station is as follows (Refer to Drawing No. 1908-2410):

Table F7.1: Existing Meteorological Monitoring Locations at Derrinnumera Landfill Facility

Existing Meteorological Monitoring Locations at Derrinnumera Landfill Facility	
Reference No.	Grid Reference
Met Station	E104244, N293675

Post Closure Phase:

The weather station will remain in place upon completion of activities on site.

F8 LEACHATE

Treated leachate monitoring for the proposed Leachate Treatment Facility has been dealt with in Section F4 - Sewer Discharge above.

The existing leachate monitoring programme, currently in place under Licence No. W0021-01, will continue for the existing landfill facilities. Two (2) leachate monitoring locations (L1 and L5) were set up at the locations as shown in Drawing No. 1908-2411.

The grid references of the existing leachate monitoring stations are as follows:

Table F8.1: Existing Leachate Monitoring Locations at Derrinmera Landfill Facility

Existing Leachate Monitoring Locations at Derrinmera Landfill Facility	
Reference No.	Grid Reference
L1	E104521, N293868
L5	E104279, N293583

It is proposed that the parameters and frequency will continue to follow those set out on Table F.4.1 of Waste Licence W0021-01.

F9 LANDFILL GAS

Landfill gas monitoring is not applicable for the proposed development of a Sludge Hub Centre and Leachate Treatment Facility, however, the existing landfill gas monitoring programme, currently in place under Licence No. W0021-01, will continue for the existing landfill facilities.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT G.1 RAW MATERIALS, SUBSTANCES, PREPARATIONS & ENERGY

The table below presents an estimate as to the consumption of materials used at the proposed Sludge Hub Centre and Leachate Treatment Facility. The final raw material, substances, preparations and energy requirements for each facility will be agreed with the Agency prior to construction of each facility.

Table G1.1: Estimation of Raw Materials, Substances, Preparations and Energy Requirements for Proposed Facilities

Estimation of Raw Materials, Substances, Preparations and Energy Requirements for Proposed Facilities			
Material/Resource	Sludge Hub Centre	Leachate Treatment Facility	Comments
Hydraulic Oil	c. 3,650 litres/annum	c. 1,000 litres/annum	Exact quantities not available at present
Electricity	Power Consumption not available at present until processes and technologies to be used are outlined*	Power Consumption not available at present until processes and technologies to be used are outlined	Electricity usages will include pumps and aeration systems in leachate treatment and powering permanent sludge drying plant and dewatering presses* (including small quantity for domestic usage).
Diesel	Interim sludge drier will be diesel fuelled	Diesel unlikely to be used as fuel for this facility	Quantities not available at present, banded storage area will be provided
Water	Water usage not available at present, cooling water will be required for drying process**	Water usage not available at present	Main usage is likely to be domestic usage within SHC Administration Building of c. 1000 m ³ /annum

* It is anticipated that natural gas will be the main fuel source for the permanent sludge drier. The consumption rate is unavailable at present. The potential to use landfill gas as an auxiliary fuel shall be investigated, and used if found feasible and cost effective, subject to regulatory requirements. Microturbine options that generate power and heat from natural gas shall also be considered in the context of the overall heat balance and energy requirement of the Hub Centre.

** Water used for cooling will be recycled insofar as possible.

ATTACHMENT G.2 ENERGY EFFICIENCY

An estimation of energy used or generated by the proposed activities is not possible at present, as the processes and technologies to be utilised are currently unknown given the DBO nature of the project.

As mentioned above, the potential to use landfill gas as an auxiliary fuel shall be investigated, and used if found feasible and cost effective, subject to regulatory requirements. Microturbine options that generate power and heat from natural gas shall also be considered in the context of the overall heat balance and energy requirement of the Hub Centre.

Depending on the final contract, there may be a potential to produce electricity from Combined Heat and Power (CHP) plant in the Sludge Hub Centre.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT H.1 WASTE TYPE AND QUANTITIES

H.1 (A)

Third Schedule, Class 1 - “Deposit on, in or under land (including landfill)”

40,000 tpa : This refers to the quantity of wastes to be accepted for disposal to landfill at the facility, which has been already licenced under existing Waste Licence No. W0021-01 for Derrinnumera landfill site.

1,464 tpa: This refers to the proposed landfilling of dried sludges arising from municipal water treatment plants and the proposed on-site leachate treatment facility.

Third Schedule, Class 4 - “Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.”

This refers to the collection and pumping of landfill leachate to an onsite leachate treatment facility. Leachate will be stored in an existing lagoon with an approximate capacity of 3600m³. This also relates to the proposed treatment of leachate not exceeding 500m³/d.

Third Schedule, Class 5 - “Specifically engineered landfill including placement into lined discrete cells which are capped and isolated from one another and the environment.”

40,000 tpa: This class relates to the disposal of 40,000 tpa of non-hazardous waste into lined cells at the facility, which has been already licenced under existing Waste Licence No. W0021-01 for Derrinnumera landfill site.

1,464 tpa: This refers to the proposed landfilling of dried sludges arising from municipal water treatment plants and the proposed on-site leachate treatment facility.

This also refers to the collection and pumping of landfill leachate to an onsite leachate treatment facility (Max. daily output = 500m³/d).

Third Schedule, Class 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”

32,580 tpa: This class refers to the possible biological treatment by in-vessel composting of up to 32,850 tpa of sludge at the Sludge Hub Centre.

This class also refers to the biological treatment of landfill leachate at an onsite leachate treatment facility (Max. daily output = 500m³/d).

Third Schedule, Class 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 calcinations)”

32,580 tpa: This class also refers to the Physico-Chemical treatment of 32,580 tpa of sludge at the Sludge Hub Centre, (sludge drying).

This class also refers to the Physico-Chemical treatment of landfill leachate at an onsite leachate treatment facility. (Max. daily output = 500m³/d).

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 activity refers to the storage of waste at the civic waste facility for eventual disposal. This activity also provides for the temporary storage of unacceptable waste in the waste quarantine area pending its dispatch from the site to alternative waste disposal facilities. (Quantities will vary).

It is important to note that the above activities detailed under Class 13, Third Schedule are already licenced for the existing facility (Licence No. W0021-01). No alterations / modifications are required to be made under the review of the licence for these existing activities).

The application also provides for the temporary storage of unacceptable sludge in the sludge quarantine area pending its dispatch from the site to alternative waste disposal facilities. (Quantities will vary).

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

The activity refers to the bring site within a larger civic amenity site to facilitate the collection of organic materials. It is important to note that the aforementioned activity detailed under Class 2, Fourth Schedule is already licenced for the existing facility (Licence No. W0021-01). (No alterations / modifications are required to be made under the review of the licence for this existing activity).

32,580 tpa: This class refers to the possible biological treatment by in-vessel composting of up to 32,850 tpa of sludge at the Sludge Hub Centre.

Fourth Schedule, Class 3 - “Recycling or reclamation of metals and metal compounds”

The activity refers to the bring site within a larger civic amenity site to facilitate the collection of metals and metal compounds. It is important to note that the aforementioned activity detailed under Class 3, Fourth Schedule is already licenced for the existing facility (Licence No. W0021-01). (No alterations / modifications are required to be made under the review of the licence for this existing activity).

Fourth Schedule, Class 4 - “Recycling or reclamation of other inorganic materials”

The activity refers to the bring site within a larger civic amenity site to facilitate the collection of inorganic materials. It is important to note that the aforementioned activity detailed under Class 4, Fourth Schedule is already licenced for the existing facility (Licence No. W0021-01). (No alterations / modifications are required to be made under the review of the licence for this existing activity).

Fourth Schedule, Class 9 – “Use of any waste principally as a fuel or other means to generate energy”

72,580 tpa: The application includes for the possible use of landfill gas or exhaust gases from the sludge treatment process as a fuel for the generation of energy. The SHC shall be utilised for the collection, drying, temporary storage and sustainable re-use or disposal of treated municipal sludge collected from wastewater treatment plants throughout County Mayo, with design loadings of 32,580 tonnes per annum (tpa) of sludges (design loadings for Year 2020).

(32,580 tpa (sludges) + 40,000 tpa (landfill) = total 72,580 tpa)

Fourth Schedule, Class 10 - “The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system”

32,580 tpa: The application includes for the use of a dried sludge product or low-grade compost as daily cover on the landfill or incorporated with soil and subsoil and used as final capping material or on earthen embankments at the Derrinnumera Landfill (i.e. as a soil supplement to encourage vegetation). While the majority of the above quantity will be exported from the site for re-use as fertiliser, a smaller quantity will be retained on site for the activities listed above.

Fourth Schedule, 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”

The activity refers to the access controlled civic amenity site for the collection of household hazardous waste and other bulky wastes including the bring site which has been installed within the civic amenity site to facilitate the collection of recyclable materials. It is important to note that the above activities detailed under Class 13, Fourth Schedule are already licensed for the existing facility (Licence No. W0021-01). No alterations / modifications are required to be made under the review of the licence for these existing activities).

For inspection purposes only:
Consent of copyright owner required for any other use.

H.1 (C)

The proposed development consists of the following elements:

- A Sludge Hub Centre, which will process up to 32,580 tonnes per annum (2020 design loadings) of municipal sludges from wastewater and water treatment plants in County Mayo and a small quantity of sludge from the Leachate Treatment Facility itself.
- A Leachate Treatment Facility, which will treat up to a maximum of 500m³ per day of leachate from the existing landfill and a small quantity of sludge supernatants.

The development is sited on an existing landfill facility, which is currently licenced for 40,000 tpa of non-hazardous waste for disposal to landfill. The municipal waste accepted here includes both household and commercial waste. According to the 'Replacement Waste Management Plan for the Connaught Region 2006-2011', 64% of municipal waste produced in Mayo is household waste and 36% is commercial waste.

Therefore, it can be assumed that out of 40,000 tpa of non-hazardous landfill waste:

64% = Household Waste = 25,600 tpa
36% = Commercial Waste = 14,400 tpa

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT H.2 WASTE ACCEPTANCE PROCEDURES

All sludges accepted at the facility will be recorded and will be subject to waste acceptance measures, which will be licensed by the EPA.

The Sludge Hub Centre operator will require the source of incoming sludges to be identified prior to acceptance at the site. The collector of the sludges must, if requested, provide documentation that the sludge meets the required specification. Sludge not conforming to the required specification will not be accepted at the site.

All sludge delivery vehicles arriving at the facility will be obliged to enter onto the weighbridge where they will be weighed and the accompanying documentation checked by Mayo County Council weighbridge operators. The vehicle will then drive from the weighbridge to the Sludge Hub Centre.

Any sludge delivered to the facility that does not have the appropriate documentation or which, upon inspection at the weighbridge, is deemed not to be suitable will not be accepted. In such event the weighbridge operator will record the name of the sludge delivery contractor, the driver, the registration number of the vehicle and the nature and origin of the sludge. The weighbridge operator will instruct the vehicle driver to return the waste to the source. Records of any such incidents will be maintained on site and reported to the EPA.

Any sludge identified, as not suitable following off loading at the sludge acceptance area will be immediately removed to the quarantine area. The waste will be stored in the quarantine area pending its removal off site by the sludge contractor who delivered the waste. In the event of the contractor refusing to remove the out of spec sludge, the facility operator will ensure that it is removed off site and disposed of at an appropriate facility as soon as possible.

Non-compliant sludge will only be stored on-site over night if such sludges are delivered near the end of the working day and the contractor cannot arrange for the sludge to be hauled off site until the following day. The facility operator and Mayo County Council will maintain records of the sludge source, quantity, and ultimate disposal/treatment facility.

The exact location of the waste inspection and quarantine areas for the SHC have not been decided due to the fact that the exact process and design of the SHC has not been finalised.

ATTACHMENT H.3 WASTE HANDLING

Waste handling procedures are outlined in the following sections of the EIS:

- Section 2.3.1.1 Sludge Reception and Handling (Sludge Drying Plant);
- Section 2.3.1.6 Finished Product Storage and Handling (Sludge Drying Plant);
- Section 3.2.4 Sludge Thickening and Dewatering (Sludge Drying Plant);
- Section 3.2.5.4 Design of Process Units for the Permanent Sludge Drier
- Section 3.2.6.4 Sludge Reception/Preparation Area (Tunnel Composting Area).

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT H.4 WASTE ARISING

It is estimated that up to 1,412 tDS per year of waterworks sludges will be dried at the SHC. In accordance with the *'Management of Water Treatment Sludges'* Circular, dated February 2005, the SHC will be required to dry waterworks sludges on a batchwise basis (separately from municipal wastewater treatment plant sludges) in order to minimise the end volume of sludge and to improve stability and handleability for disposal to landfill. A small volume of surplus sludge arising from the leachate treatment process will also be dried batchwise. The total quantity of these sludges is provided in Table H.1 (ii) of the application form (i.e. 678 tonnes per month as an approximate average at wet weight). In accordance with best environmental practice, dried waterworks and LTF sludges will be placed on the landfill at Derrinnumera.

For inspection purposes only.
Consent of copyright owner required for any other use.

ATTACHMENT I EXISTING ENVIRONMENT & IMPACT OF THE FACILITY

ATTACHMENT I.1 ASSESSMENT OF ATMOSPHERIC EMISSIONS

Refer to Sections 4.6, 4.7 and 4.8 of the EIS.

ATTACHMENT I.2 ASSESSMENT OF IMPACT ON RECEIVING SURFACE WATER

Refer to Sections 4.2 and 4.4 of the EIS.

ATTACHMENT I.3 ASSESSMENT OF IMPACT ON SEWER DISCHARGE

Refer to Section 4.4 of the EIS.

ATTACHMENT I.4 ASSESSMENT OF IMPACT ON GROUND/GROUNDWATER EMISSIONS

Refer to Sections 4.3 and 4.4 of the EIS.

ATTACHMENT I.5 GROUND AND/OR GROUNDWATER CONTAMINATION

Refer to Sections 4.3 and 4.4 of the EIS.

ATTACHMENT I.6 NOISE IMPACT

Refer to Section 4.5 of the EIS

ATTACHMENT I.7 ASSESSMENT OF ECOLOGICAL IMPACTS & MITIGATION MEASURES

Refer to Sections 4.1, 4.2 and 4.9 of the EIS.

ATTACHMENT J EMERGENCY PREVENTION & EMERGENCY RESPONSE

The Operators of the Sludge Hub Centre and Leachate Treatment Facility will be required to develop policies in relation to accident prevention and emergency response, depending on the treatment process to be used. Details of their policies will be agreed with the Agency prior to construction and operation, particularly in relation to the Leachate Treatment Facility. All facilities will have to comply with the latest Health & Safety Regulations.

In terms of the proposed facility, there are 6 contingencies that must be allowed for:

1. Operational failure of plant and equipment;
2. Industrial action by operational staff;
3. Untreated leachate discharge within or outside the site;
4. Accidental fuel spillage outside the bunded area;
5. Fire in the facility;
6. Any other event, which might pose a significant threat.

Notification:

In the event of an emergency the following are to be notified.

1. Fire Services – in the event of a fire or a significant leachate spillage or serious accident involving mobile plant.
2. Ambulance Services/Medical Team – should there be a threat to human life or serious injury.
3. Gardai – In the event of fire, explosion or road accident.
4. Senior personnel – within the Mayo County Council viz. County Engineer, Senior Executive Engineer Environmental Section, Local Area Engineer.
5. Environmental Protection Agency.
6. North Western Fisheries Board – should there be any threat to watercourses in the area of the spillage.

Control of Operations:

In the event of a risk of fire or explosion the Senior Fire Officer will take control.

In the event of a discharge of untreated leachate the Senior Fire Officer will direct operations and the local Area Engineer or Site Manager, if Area Engineer is not available, will work to his/her specifications.

Communications:

It is essential that the following communications systems are available for priority usage during an emergency:

1. Fire Services Radio Link.

2. Garda Radio Link.
3. Ambulance Services Radio Link – linking the mobile units to the medical officers and the hospital.
4. Private lines – either landlines or mobile phones to enable contact between all parties concerned and their respective headquarters.

All parties involved in the Emergency Response Procedure will be issued with this draft proposal. Any recommendations by the Agency will be adhered to and a final copy of the approved procedure will then be circulated to all parties.

The phone and fax number at the Derrinnumera Landfill is (098) 41632, while the phone number at the County Buildings is (094) 9024444. The fax number at County Buildings is (094) 9025891.

Response Procedures:

1. Operational failure of plant and equipment;

It will be the responsibility of the facility supervisor to inspect the plant and equipment each day and ensure that it is operational. In the event of operational failure, the facility manager will contact the Executive Engineer in Mayo County Council who is responsible for licence compliance and inform them of the status of the plant and equipment. In the event of operational failure of the plant and equipment it will be the responsibility of the facility operator to arrange for the immediate repair or replacement of equipment. Any incidents of such will be recorded and brought to the attention of the Agency.

It will be the responsibility of the facility manager to inspect all grabs, cranes, conveyors and front loaders each day and ensure that all are operational. All equipment on-site will have full redundancy built in. In the event of a breakdown of vehicle/plant, the facility operators will have to source replacement equipment from off-site plant contractors. Where any breakdown of any vehicles/plant occurs, the facility manager will have to contact the Executive Engineer in Mayo County Council and inform them of the status of the vehicle/plant.

2. Industrial action by operational staff;

In the event of industrial action by operational staff at the facility, the facility manager concerned will have to contact the Executive Engineer in Mayo County Council and inform them of the situation. Any incidents of such will be recorded and brought to the attention of the Agency.

3. Untreated leachate discharge within or outside the site;

In the event of a threat to surface water the following is to be implemented:

- Inform the North Western Fisheries Board and the EPA;
- Contain any spillage within the perimeter drain locally, as far as possible, by damming with excavated material or booms.
- Pump water held back by the dams into tanker or lined cell
- Detect source and carry out necessary remedial works.
- Monitor situation daily until threat is removed.

In the event of a threat to groundwater:

- Inform the EPA;
- The groundwater boreholes are to be constantly pumped back to the lined cells/tanker
- Detect source and carry out necessary remedial works
- Monitor situation daily until threat is removed.

Untreated leachate discharge outside the site:

- Detect source
- Inform the EPA;
- Monitor extent of contamination
- Inform public if risk is posed
- Take appropriate action to alleviate situation.

Spillage of treated leachate due to rising main damage:

- Area Engineer and/or machinery Engineer to be contacted to organize machinery to be brought to scene.
- Call Fire Services
- Shut off leak if possible
- Dam watercourse
- Take samples upstream, downstream and of the leachate itself
- Gather up leachate into back up tanker
- Cleanup roadway.

4. Accidental fuel spillage outside the bunded area;

In the event of a fuel spillage outside the bunded area, the emergency procedures as outlined in Section 3 (above) will be followed.

5. Fire in the facility:

Fire within site confines:

- Call Fire Services;
- On arrival of Fire Services liaise with fire officer and follow his directions.

Fire in incoming vehicle:

- Call Fire Services;
- Instruct driver to unload at Inspection Area;
- Initiate on site fire drill;
- On arrival of Fire Services liaise with fire officer and follow his directions.

Fire outside boundary but adjacent to facility:

- Call Fire Services and direct to scene;
- On arrival of Fire Services liaise with Fire Officer and monitor closely for risk of fire spread into facility;

Explosion

- Evacuate immediate area;
- Call Fire Services, Ambulance Services, Medical team in the event of fire or serious injury;
- Close main gate to incoming traffic;
- Check for damage to leachate collection and containment system;
- Check gas levels in enclosed areas.

General

Any firewater generated will be collected in the on-site surface-water drainage system. The firewater will be contained in the attenuation systems on-site and will be tested. If necessary, the firewater will be pumped for treatment at the LTF or removed by tanker to a suitable treatment facility.

Each facility operator will have to take precautions at their facility in regard to fire abatement, response, training and awareness. These include:

- Fire fighting equipment and structures on-site in conjunction with a Fire Prevention Specialist;
- To provide and maintain suitable fire extinguishers in all buildings;
- Fire Safety Systems - telephone numbers of local fire, police and hospital are posted at head height on the wall in front of the telephone in the site office.
- Emergency Response Procedures
- Fire Prevention and Containment Design Features

6 Any other event, which might pose a significant threat.

If the emergency is of a nature which causes a threat to the health or the community, disruption of essential services or causes or is likely to cause such numbers of casualties or damage to property or to the Environment, then the Major Emergency Plan for the County will be initiated.

The above Emergency Response Procedures will be reviewed at the time of appointment of a DBO Contractor to the proposed facilities, which will be agreed with the Agency.

ATTACHMENT K REMEDIATION, DECOMMISSIONING, RESTORATION & AFTERCARE

It is the intention that the facilities at the Derrinmera Sludge Hub Centre and Leachate Treatment Facility will continue in operation for the foreseeable future. An Environmental Liabilities Risk Assessment will be carried out and decommissioning plan written prior to commencement of operation at the site. Prior to commencement of operation, an Aftercare Plan will be developed.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

ATTACHMENT L STATUTORY REQUIREMENTS

ATTACHMENT L.1 SECTION 40(4) WMA

Mayo County Council has no legal offences or convictions to date under the Waste Management Acts 1996 to 2003.

ATTACHMENT L.2 FIT AND PROPER PERSON

The site manager and site operatives will be trained to an appropriate standard. The site managers and site operatives will attend at appropriate intervals Certified Training Programmes, such as those offered by the FAS Environmental Training Unit.

The exact qualifications of personnel employed at the site are not known as of yet but the following guidelines will apply.

- Site Managers will be responsible for the day-to-day operation and supervision of each facility and will be trained in EPA waste acceptance and handling procedures, and in the Environmental Management of the facility.
- The site operatives, who will also receive training in waste acceptance and handling procedures that will be responsible for operating the weighbridge and logging vehicles.

Each site manager will hold a copy of the following documents:

- Waste Licence Application;
- Waste Licence Conditions as set down by EPA; and
- Facility Environmental Management Plan;

Training and awareness among facility staff will be achieved through external and in-house training as well as through prominent posting of environmental awareness material within each site office.