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## A. NON-TECHNICAL SUMMARY

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A Non-Technical Summary is to be submitted. The summary should include information on those aspects outlined in the Guidance Note and must comply with the requirements of Article 12 (1) (q) of the Waste Management (Licensing) Regulations, S.I. 133 1997. For applications received after 23/06/00 the summary must comply with the requirements of Article 12 (1)(r) of the Waste Management Licensing Regulations, S.I. 185 of 2000.

The Non-Technical Summary should form Attachment A.1.

Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
Article 12 (1) (q) of S.I. 135 of 2000 complied with.	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>

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## ATTACHMENT A.1 – NON TECHNICAL SUMMARY

As required by Article 12 (1) (r) of the Waste Management (Licensing) Regulations, No. 185 of 2000, a Non-Technical Summary is provided below, which contains information on the matters specified in Paragraphs (e) to (q) of Sub-Article 12(1).

### A.1.1 Nature of the Facility

#### This section relates to Article 12(1)(e)

Brownfield Restoration Ireland Ltd. (BRI) proposes a multi-faceted facility that includes the following elements:

Excavate previously deposited mixed Commercial & Industrial (C&I) / Construction & Demolition (C&D) wastes, process and recycle the excavated material to produce several potentially saleable or reusable products such as topsoil, subsoil, stone, bricks, crushed aggregate, scrap metal, wood, glass etc. Residual materials, which are likely to include stained fines, plastics, paper, cardboard and other materials that cannot be reused, will require onward disposal.

1. Construction of a Centralised Composting Facility, Resource Recovery Building and the installation of a mobile waste recovery unit;
2. Develop a fully engineered lined landfill facility for disposal of residual materials from recycling operations on site, and other commercial and industrial wastes that cannot be recycled;
3. Acceptance of C&I, C&D and Household wastes for recycling/recovery activities;
4. Restoration of all lands for a useful purpose in the future.

The facility will be designed to receive a maximum of **180,000** tonnes of C&I, C&D and Household wastes in total.

Mixed wastes that have been previously deposited at the Whitestown Lower site will be excavated and processed at the proposed BRI Facility over a 1 to 3 year lifespan. The various recovered recyclable products (e.g. metal, soils, stones etc.) will be segregated. Large rocks and chunks of concrete will be sent through a crusher to produce recycled aggregate. The recovered products will be marketed and/or used for on-site engineering.

The location of the site is shown on Figure A-1 with the BRI land holdings, and the application site boundary is shown on Figure A-2. Figure A-3 depicts

the potential limits of the engineered residual waste disposal area, and proposed environmental monitoring points.

### **A.1.2 Geological and Hydrogeological Nature of the Land**

#### **This section relates to Article 12(1)(e)**

The overburden, geological and hydrogeological nature of the land was explored by detailed desk studies and on site investigations by ERML.

#### **Site Overburden**

The landscape in and surrounding the site derives its present morphology and its rich sand & gravel deposits from the influence of melt water channels (otherwise known as 'Eskers') from the Quaternary glaciation of Ireland.

The Geological Survey of Ireland (GSI) 'Quaternary Deposit Map' has classified the overburden of the area as "Gravel & Sand derived chiefly from Chert" (GCH), with the site in question marked as a "Sand & Gravel Pit in use".

The sand and gravel deposits have been worked from the site since the early 1900's, and more intensively in the last 30 years. Backfilling of sections of the void space with wastes is understood to have taken place between the 1970's and 2001.

#### **Site Geology**

The bedrock beneath the glacial sequence on the site comprises of the Lower Palaeozoic (Cambrian) Butter Mountain Formation. This consists of dark blue-grey slates, with thin interbedded grey quartzites in places (which may include beds, which are complexly folded and garnet rich, called "Coticules").

To the extreme southeast of the site, along the site contact with the Carrigower River, the bedrock changes to the Donard Andesite Member. This member of the main Butter Mountain Formation comprises of fine-grained volcanic andesites.

A GSI 'Well Search', for information on wells within 2km of the site, listed twelve wells. They have varying depths to bedrock of 0.9m to 27m, which may be explained by the undulating glacial landscape of the area.

#### **Site Hydrogeology**

##### **Groundwater Classification**

Based on desktop reviews, it is understood that three hydrogeological units underlie the site, namely:

- Shallow water table in overburden sand and gravels and upper fractured bedrock.

- Deeper bedrock aquifer – Butter Mountain Formation.
- Deeper bedrock aquifer – Donard Andesite Member.

The Butter Mountain Formation, which underlies the majority of the site, is classified by the GSI as 'LI', which is a Locally Important Aquifer, with bedrock, which is moderately productive, only in Local Zones.

The Donard Andesite Member, which underlies only the southeast boundary of the site, is also classified by the GSI as a Locally Important Aquifer, with bedrock, which is moderately productive, only in Local Zones (LI).

### Groundwater Vulnerability

The GSI classify both the Butter Mountain Formation & the Donard Andesite Member as having High Vulnerability. However, as bedrock has been identified on the site within 3.0 metres of the surface (where sands and gravels have been extracted), a vulnerability rating of 'Extreme' is more appropriate.

### Groundwater Protection Responses for Landfills

Based on the GSI Booklet entitled *Groundwater Protection Schemes, 1999, Section Groundwater Protection Responses for Landfills – Response Matrix for Landfills*, the aquifer classification 'LI' and the 'Extreme' vulnerability rating, results in a protection response of **R2<sup>2</sup>** for landfill. As outlined in the GSI response matrix, the following guidelines apply:

Acceptable subject to guidance outlined in EPA Landfill Design or conditions of waste licence:

- *Special attention should be given to checking for the presence of high permeability zones. If such zones are present, then the landfill should only be allowed if it can be proven that the risk of leachate movement to these zones is insignificant. Special attention must be given to existing wells down gradient of the site and to the projected future development of the aquifer*
- *Groundwater control measures such as cut-off walls or interceptor drains may be necessary to control high water table or the head of leachate may be required to be maintained at a level lower than the water table depending on site conditions.*

### Groundwater Usage

Two public water supplies are located within 4km of the site (Freynestown & Eadestown), both of which are supplied by springs.

Site walkover surveys and discussions with the Local Authority indicate that there is no groundwater users between the site proposed for development and the Carrigower River (i.e. a hydraulic divide) located ca. 200 metres southeast of the site.

It is understood that the two residences located immediately south of the site are supplied by the Eadestown Public Water Supply. This mains water infrastructure runs from Eadestown, which lies ca. 4km south of the site, south of the Rivers Slaney and Carrigower. A small domestic pipe runs north from the Whitestown crossroads to supply these two residences. This information is based on discussions with the Local Authority.

The two surface water features described above are understood to act as groundwater divides, thus reducing the potential of impact on groundwater users south of these river features. It is noted that there are no known groundwater users immediately down-gradient of the site and north of the Carrigower River.

### **Groundwater Flow**

Groundwater levels were taken at the site between December 2003 and February 2004. A general groundwater flow map for the site and surrounding area was drawn up using the 3 February 2004 data set (Figure 3.7.4). The groundwater was shown to be flowing in a general northwest to southeast direction.

The average hydraulic gradient across the site is calculated to be in the range of 0.02 and 0.03.

### **A.1.3 Classes of Activity**

#### **This section relates to Article 12(1)(f)**

In accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 (WMA, 1996), as amended, the following classes of activity will be carried out on the site:

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<b>THIRD SCHEDULE - WASTE DISPOSAL ACTIVITIES</b>		
<b>Class</b>	<b>Description</b>	<b>Comment</b>
<b>4</b>	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.	A leachate holding tank will be constructed on-site.
<b>5</b>	Specifically engineered landfill, including placement into lined discrete cells, which are capped and isolated from one another and the environment.	The base of the former sand and gravel pit will be lined with a geological barrier and geomembrane. A leachate collection and evacuation system will also be included. The landfill will be developed in phases. The phases will be distinct, but the basal leachate collection system will interconnect the phases.
<b>7</b> <b>Principal Activity</b>	Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcinations), which results in final compounds or mixtures, which are disposed of by means of any activity, referred to in paragraphs 1 to 10 of this Schedule.	The Principal Activity includes recovery activities for previously deposited wastes, as well as recovery activities for proposed incoming wastes.
<b>11</b>	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.	The applicant proposes to receive and separate certain types of waste from the tipped loads for reuse e.g. subsoil, broken concrete, bricks etc. The separated wastes may be processed and/or mixed. The separated or mixed wastes may be stockpiled.
<b>13</b>	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.	From time to time some waste may be delivered to the Facility that cannot be landfilled or treated. In such a case that waste will be stored on-site pending its removal and safe disposal elsewhere. Because of weather conditions materials such as topsoil and subsoil may also be stored on the site, prior to leveling.

<b>FOURTH SCHEDULE – WASTE RECOVERY ACTIVITIES</b>		
<b>Class</b>	<b>Description</b>	<b>Comment</b>
<b>2</b>	Recycling or reclamation of organic substances, which are not used as solvents (including composting and other biological transformation processes).	Pretreatment of organic/biodegradable waste in a building to meet EU Directives is proposed
<b>3</b>	Recycling or reclamation of metals and metal compounds.	As the market dictates, metals will be separated and recycled. In this event large containers will be supplied on site.
<b>4</b>	Recycling or reclamation of other inorganic materials.	The applicant considers reusing inert inorganic materials such as concrete and subsoil as a waste reclamation activity, for onward use on or off-site
<b>11</b>	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	The inert construction and demolition wastes such as clay, topsoil, broken concrete and asphalt may be used at the site.
<b>13</b>	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.	Storage of any material on the site prior to reclamation.

#### **A.1.4 Quantity and Nature of the Waste to be Recovered or Disposed of at the Site**

**This section relates to Article 12(1)(g)**

Proposed Quantity of Wastes Imported to the Site:

<b>Waste Type</b>	<b>Maximum Tonnes per Annum</b>	<b>Estimated Total</b>
Household	20,000	120,000
Commercial	40,000	280,000
Construction and Demolition	60,000	420,000
Industrial Non-Hazardous Solids	60,000	420,000
Wastes imported for restoration purposes	60,000	180,000

The above totals are estimated over the life of the site. The amounts will vary from year to year, however the proposed maximum import rate is estimated at **180,000** tonnes per annum.

### **A.1.5 Raw and Ancillary Materials, Substances, Preparations, Fuels and Energy, which will be utilised in or produced by the activity**

#### **This section relates to Article 12(1)(h)**

The facility will use diesel fuel, electricity, water and smaller amounts of vermin controls and herbicides. Construction materials will also be needed for the development of the site.

These materials are discussed below:

**Diesel** The annual diesel consumption of the proposed facility equipment is not currently available as all plant has not been selected. Details will follow.

**Electricity** Electricity consumption is not currently available as all plant has not been selected. Details will follow.

**Water** Site water will be obtained from a water main, which is fed by the Edestown Spring group water supply. Water will be used for dust suppression, wheel wash, toilets and a small canteen.

An employee rate of consumption of 60 litres per day is assumed. There will be possibly up to 10 employees on the site when the waste management facility water usage by employees is estimated to be in the range of 165 m<sup>3</sup>/year.

**Vermin Control** Vermin controls will be employed. Specific details of these will be provided by the company contracted to implement a vermin control plan if and when required. Brownfield Restoration Ireland Ltd. will furnish to the Agency the nature and quantities of chemicals, if and when they are used.

**Herbicides** Brownfield Restoration Ireland Ltd. will furnish the nature and quantities of chemicals if and when they are used.

### **A.1.6 Plant, Methods, Processes and Operating Procedures for the Activity**

#### **This section relates to Article 12(1)(i)**

The Mobile Waste Recovery Unit (MRU) will include some or all of the following plant:



- 20 tonne (minimum) excavator(s),
- 25 to 40 tonne dumpers,
- Finger screen(s),
- Mobile picking station
- Shredder,
- Trommel screen,
- Crushing plant,
- Magnet to remove metals, and
- Air compressor with blower to remove light wastes.

The plant inside the Resource Recovery Building (RRB) will comprise some or all of the following:

- Excavator (s)/ Grabs
- Wheeled Loader
- Fingerscreen(s)
- Trommel Screen
- Shredder
- Various hoppers and conveyors
- Picking line
- Magnet to remove metals
- Eddy Current (aluminium)
- Air compressor with Blower to remove light wastes
- Baler
- Fork-lift

Possible plant and equipment to be used in the Centralised Composting Facility (CCF) attached to the RRB include:

- Feedstock Mixer
- In-vessel composter (as designed by Wright Environmental Management Inc.)
- Other equipment available in the RRB

Plant related to waste disposal and covering in the lined landfill will include:

- Waste Compactors
- Excavator
- Bull dozer
- 25-30 tonne dump truck
- JCB / Road Sweeper
- Farm tractor and bowser

## Methods And Processes

The Master Plan for the BRI Facility is to:

- Continue with the processing of the remaining sand and gravel deposits
- Process, treat and recover previously deposited wastes, which represent a potential source of pollution
- Reinstate and restore the lands by filling the void left by sand and gravel extraction with residual treated wastes from on-site and off-site sources.

The developer is proposing to develop the following key waste management infrastructure, to achieve the above plan:

- Mobile Waste Recovery Units (MRU)
- Resource Recovery Building (RRB) which will include:
  - (i) Materials Recovery Facility (MRF) infrastructure
  - (ii) Centralised Composting Facility (CCF) infrastructure
- Lined area in which processed and treated residual wastes will be deposited

## Operating Procedures

Facility operations will include:

- excavating previously deposited wastes;
- accepting wastes;
- processing and treating wastes;
- removing recovered wastes from the facility or using recovered wastes at the site;
- maintenance of the infrastructure and plant;
- filling the engineered lined void;
- restoring the site.

## Operating Times:

Operations on-site will be between 7:00 am and 6.30 pm Monday to Friday and on Saturday between 7:00 am and 5:00 pm.

The facility will accept materials from Monday to Friday, 8:00 am to 5:30 pm and Saturday 8:00 am to 4:00 pm.

The facility will be closed on Sundays and Bank Holidays.

### **Personnel:**

There will be approximately 10 operatives and a site manager employed directly to operate and manage the facility. Consultants will be retained to undertake environmental monitoring.

Waste acceptance procedures that are outlined in EPA manuals will be reviewed and incorporated into the standard operating procedures for the site. They will include the following:

- procedures prior to the acceptance of waste at the facility
- procedures upon arrival of waste at the facility
- procedures for the excavation of waste at the facility
- procedures in the event of excavation of hazardous waste materials

Procedures for the handling of waste at the facility will also be incorporated into the operating procedures for the site. An outline of waste acceptance and handling procedures for the proposed BRI Facility have been submitted as part of this Waste Licence Application.

### **A.1.7 Information for the Purpose of Enabling the Agency to make a determination in relation to the matters specified in Paragraphs (a) to (d) of Section 40(4) of the Waste Management Act (WMA), 1996**

**This section relates to Article 12(1)(j)**

#### **A.1.7.1 Section 40 (4), Paragraph (a) of the Waste Management Act 1996 - Compliance with Emission Standards**

##### **Leachate Emissions to Groundwater**

The proposed engineered and lined area will include a base and slope lining system for the containment of leachate. The lining system will be overlain by a layer of drainage stone, through which the leachate will flow through. The grade on the landfill floor will be such that the leachate will flow by gravity towards sumps at its lowest point.

The lining system will be a composite liner that will comprise a soil layer, minimum of 1 m thickness and a 2 mm thick high density polyethylene (HDPE) sheeting. The soil liner will have a coefficient of permeability of less than  $1 \times 10^{-9}$  m/sec. The design levels for the top surface of the base liner are shown on Drawing BRI/103 to BRI/108 inclusive for all phases of the development. (EIS, Volume III).

The proposed base levels are dictated by bedrock, the water table level beneath the former sand and gravel pit, and the need to create a positive grade for gravity flow of leachate towards sumps where pumps will be installed in the leachate collection system. The base liner design concept is

illustrated on Drawing BRI/110 (EIS, Volume III). Therefore, discharge of leachate into groundwater is unlikely.

The amount of infiltration will be limited upon completion of filling, by placing a low permeability clay/geosynthetic layer on the deposited waste.

### **Leachate Emissions to a Waste Water Treatment Plant**

Subject to agreement, leachate will be hauled by tanker truck to a County Council Waste Water Treatment Plant where it will be treated. The composition of the leachate discharge into the treatment plant will be agreed with the sanitary authority.

### **Landfill Gas Emissions to Air**

Landfill gas comprises mainly methane and carbon dioxide.

Gases generated by decomposing wastes at the site will be vented naturally and through a number of vertical pipes installed in the waste. The emissions will be monitored. Active controls and flaring will be installed as and when required.

### **Dust Emissions**

There are no Irish emission limit values for dust. Site management practices such as vegetating exposed clay surfaces as soon as practical and sweeping and watering site roads, and provision of a wheel wash will be implemented to ensure dust emission rates from the site will be kept to the minimum possible and below normally accepted nuisance levels at potential receptors located beyond the site boundary.

### **Surface Water Emissions**

Surface runoff within the existing pit is practically nil as most of the incident precipitation infiltrates the ground surface where permeable sand and gravel deposits are present. There is standing water in some parts of the low-lying sections of the site, which is likely to be groundwater displaying on the surface.

As part of the development plan, bunds are proposed to be constructed along the east side of the site for several purposes, one of which is to contain runoff from the site, towards the Carrigower River during the filling phase. This bund will be constructed from low permeability soil, and will be constructed in keeping with the overall phasing-plan for the development of the facility.

During the filling phase, runoff from the site is expected to be kept to a minimum. Surface water accumulating in lined areas containing waste will be treated as leachate. Perimeter drains and bunds will be constructed around waste recovery excavations to the extent practical to prevent the ingress of runoff into excavations. Runoff from completed landfill areas will be collected

in perimeter French drains, which will subsequently drain into soakaways or surface water management ponds.

Runoff from paved hardstands and roads will be directed to gullies, silt trap and interceptor. Liquid from the wheel wash will be drained back into the landfill.

When the site is restored to the proposed final contours there will be some quantity of runoff from the surface until such time as when a vegetative cover is established. With the currently proposed sloped surface shown on Drawing BRI/109 (EIS, Volume III), the proposal includes the construction of shallow French drains or drainage ditches, which will feed soakaway pits that are connected to the native geological materials and/or storm water management ponds.

### **Noise Emissions**

The potential emission from the proposed development will be noise. The sources of the noise emissions will depend on the stage of the development i.e. excavation, construction, and operation processes.

Excavation of the previously deposited wastes will take place in phases over a total period of 1 to 3 years. Excavation activities will take place between the hours of 8am to 5:30pm, Monday-Friday and 8am to 4pm on Saturdays. Noise impacts associated with the excavation and processing of wastes will arise mainly from the following sources:

- Excavators and dumper trucks operating within the site (approximately 4 to 6 No.)
- Site personnel vehicles entering and leaving the site from the N81 (approximately 15 vehicles per day).
- Screening plant and intermittent use of a crusher (MRU).

It is anticipated that up to 10 items of plant machinery or vehicles, some stationary, some mobile, may be in use during the excavation phase but it would be unlikely that all would operate simultaneously at one location.

### **Noise Emissions during Construction**

Construction of the proposed development will take place in three to six-month periods over the life of the facility. Noise impacts associated with construction will arise mainly from the following sources:

- Excavators, bulldozers, dumper trucks, compactors and tractors operating within the site (approximately 10 No. items).
- Site personnel vehicles entering and leaving the site from the N81 (approximately 15 vehicles per day).
- Movement of delivery vehicles associated with site buildings and materials to construct the landfill liner.

It is anticipated that up to 10 items of plant machinery or vehicles may be in use during the construction phase but it would be unlikely that all would operate simultaneously at one location.

### **Noise Emissions during Waste Recovery and Disposal Processes**

The waste recovery and disposal processes will comprise a Resource Recovery Building enclosing the waste recovery plant and equipment, a mobile recovery unit and a landfill facility. Waste recovery activities will generally take place between the hours of 8am to 5:30pm, Monday-Friday and 8am to 4pm on Saturdays. The recovery facility will be located in the north-western part of the site. The landfill will encompass the remaining void. It will be developed in 6 phases and filled over a period of approximately 8 years. Noise impacts associated with the operation of the recovery and disposal facilities will arise mainly from the following sources:

- Movement of Heavy Goods Vehicles (HGVs) entering and leaving the site from the N81;
- Movement of site personnel vehicles entering and leaving the site from the N81;
- Operation of plant and equipment within the RRB. Up to 8 items of plant machinery and vehicles may be operating on the site at any period of time.
- Operation of the MRU plant whilst previously deposited wastes are being excavated or C&D wastes are being processed.
- Operation of waste compactors, excavator, bulldozer, dumper trucks and tractor within the landfill site. Up to 4 items of plant machinery and vehicles may be operating on the site at any period of time.

**Note:** It is very unlikely that all of these sources of noise would operate simultaneously. In addition, their operation will be limited to the opening hours of the site.

#### **A.1.7.2 Section 40 (4), Paragraph (b) of the Waste Management Act 1996 - Environmental Pollution**

In the context of waste disposal and with reference to the Waste Management Act, 1996, environmental pollution is defined as:

- (a) Risk to waters, the atmosphere, land, soil, plants or animals
- (b) Nuisance through noise, odours or litter
- (c) Adverse affects on the countryside or places of interest

In summary, the proposed design and operating practices that will ensure that environmental pollution is avoided are listed below.

**Risk to Waters is avoided by:**

- Development of a fully engineered lined landfill
- Collecting and treating leachate;
- Separating clean surface water from runoff that has been in contact with waste and discharging the former into the subsurface and/or surface water management ponds
- Placing an engineered capping system on the waste.

**Risk to the Atmosphere is avoided by:**

- Passive venting and dilution of landfill gas within metres of the vent locations
- Installation of an active gas flaring system
- Minimising dust generation through road sweeping, road watering and a wheel wash

**Risk to Land, Soil, Plants or Animals is avoided by:**

- Litter fences,
- Frequent covering of wastes daily;
- Picking litter from hedgerows etc.,
- Passive venting of gas to atmosphere via vertical pipe,
- Controlling surface runoff from waste in banded areas, and
- Contracting vermin and bird control specialists.

**Nuisance through Noise, Landfill Gas, Odours or Litter is avoided by:**

- Restricting hours of operations and employing equipment that meets noise emission regulations will avoid noise nuisance.
- Odours, if present, will be avoided by frequent covering of waste
- Gas will be controlled in the future by passive and/or active collection and flaring of landfill gas.
- Litter will be controlled by shredding waste, regular patrols and fences.

**Adverse effects on the countryside or places of interest are avoided by:**

- Enhancing the overall appearance of the facility via boundary hedge planting, tree copses and vegetating the completed landfill surface

**A.1.7.3 Section 40 (4), Paragraph (c) of the Waste Management Act, 1996 "Best Available Technology Not Entailing Excessive Costs (BATNEEC)"**

With respect to the proposed BRI Facility, the principals of employing BATNEEC (Best Available Technology Not Entailing Excessive Costs) will be applied in respect to emissions as follows:

Noise, dust, landfill gas and litter emissions from the site will not contravene any relevant standard as BRI has considered in great detail the current state of technical knowledge, and will utilise BATNEEC to minimise these emissions to the maximum extent practical.

BRI will employ modern management practices and will commit the financial resources required to control emissions and ensure protection of the environment and amenity of the area. The modern management practices are described in detail this Waste Licence Application and accompanying EIS.

The modern management practices will also include hiring a qualified Facility Manager who will have the overall responsibility for operation of the facility and employing qualified engineers, technologists and inspectors to help operate and monitor the site in accordance with current standards.

Waste will be deposited in lined areas. A composite liner will be installed so that its maximum level is above the maximum level of leachate at the base. Leachate collection drainage layers and pumps will be installed to continually remove leachate. The leachate will be treated off site. Groundwater will be monitored beneath and down gradient of the site.

In the long-term, leachate production will be reduced across the site by placing a low permeability clay layer in the capping over the waste. The restored surface will be re-vegetated to further reduce the effective rainfall and the amount of water available for infiltration into the waste.

Gas management will involve passive venting through pipes and stone filled trenches installed within the deposited waste. However, active collection will be implemented to address odour nuisances (if they arise) or new environmental standard in relation to emissions.

**Note:** It is understood that the principle of BAT (Best Available Techniques) will replace BATNEEC by Section 21 of the Protection of the Environment Act 2003 (No. 27 of 2003). However, at the time of print this Section of the 2003 Act has yet to be commenced. It is noted that the BAT principle will be adopted for the BRI Facility once commenced.

#### **A.1.7.4 Section 40 (4), Paragraph (d) of the Waste Management Act, 1996 - Fit and Proper Person**

The applicant can be considered a fit and proper person as defined in the Waste Management Act for the following reasons.

- None of the relevant persons related to the applicant company have been convicted under the Waste Management Act, 1996.
- The applicant company has identified the skills required to operate and manage the facility and will hire staff with the required skills.
- Financial Provisions have been made. The cost of developing operating, monitoring and restoring the site and adhering to the



modern management practices will be paid for out of the company's resources, or annual revenues generated by the tipping fees or bank loans/leases, or via the 'Polluter Pays Principle'. Financial provisions will be put in place to address situations such as environmental pollution, un-expected closure and after-care.

### **A.1.8 Emissions**

#### **This section relates to Article 12(1)(k)**

The potential emissions from this site are described below.

#### **Leachate**

Leachate emissions are addressed in detail in the EIS, Volume I, Section 2. 8 Leachate will be pumped from the landfill, to holding tanks, before being tankered away. It is noted that a theoretical computation suggests a potential leakage of <math>100\text{m}^3\text{/year}</math>, if such breaches of the liner system are present.

#### **Sewage**

A wastewater treatment system will be installed to cater for the facility staff, to a maximum of 10 employees.

#### **Gas and Odours**

There will be a disperse landfill gas emission into the atmosphere from the surface of waste and there will be point discharges from vents through the final capping system. The estimated peak volume of gas generated on the site based on a number of arbitrary assumptions will be on average 16,000  $\text{m}^3$  per day. The emission rate in practice will be significantly less than this level upon installation of the active collection and flaring system.

Localised odours on the site near the tipping face may be associated with the gas. Details are provided in the EIS, Volume I, Section 3.1.2.

#### **Dust**

There will be disperse dust emissions into the air and onto land off site at relatively low levels. Dust emissions are dealt with in detail in EIS, Volume I, Section 3.1.1

#### **Surface Water**

Clean surface runoff will be discharge into soak-pits and/or surface water management ponds. Runoff from the paved areas, the wheelwash, etc. will be directed through a silt settling tank and a oil water separator before discharge into the ground via a soakpit. Surface water emissions from the site are dealt with in detail in EIS, Volume I, Section 3.10.

## **Noise**

Various pieces of plant and equipment on site will emit noise that will attenuate over distance. Noise emissions are addressed in detail in EIS, Volume I, Section 3.9.

## **Litter**

A 5-6 metre litter fence will be installed around the areas where disposal activities are to be undertaken.

### **A.1.9 Assessment of the Effects of Emissions on the Environment**

#### **This section relates to Article 12(1)(l)**

The effects of the emissions described above were assessed and it is concluded that with the proposed engineered features and management practices, the effects on the environment are not expected to be significant. EIS, Volume I, Sections 3.1 to 3.10 include assessments of all emissions from the facility.

### **A.1.10 Monitoring and Sampling Points**

#### **This section relates to Article 12(1)(m)**

The monitoring locations are shown on Figure A-3. The proposed monitoring stations and sampling frequencies are discussed in EIS, Volume I, Section 4. The following media will be monitored at the BRI site:

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Media	Parameter	Frequency	ELV*	Comments
Air	Dust	Three times annually	350 mg/m <sup>3</sup> /day	It is proposed to monitor dust at the locations shown in Figure J-1. In addition the site manager will observe and record dust generation daily. Complaints will be recorded and appropriate actions taken.
	Odour	Annually	N/A	Parameters tested will include VOCs, mercaptans, hydrogen sulphide.
	Noise	Annually	Day: 55 dB(A) Night: 45 dB(A)	It is proposed to monitor noise at the 6 locations shown in Figure J-1.
Landfill Gas Monitoring Boreholes	CH <sub>4</sub> , CO <sub>2</sub> , O <sub>2</sub> , Atmospheric Pressure, Temperature	Monthly	CH <sub>4</sub> - 1% v/v (20% LEL) CO <sub>2</sub> - 1.5% v/v	The concentration of methane, carbon dioxide, and oxygen will be measured in landfill perimeter gas monitoring boreholes and in shallow gas monitoring boreholes near the offices and canteen. Readings will also be taken in the site offices and RRB.
Landfill Gas Site Offices & Buildings		Weekly		
Landfill Gas Flare Inlet	CH <sub>4</sub> , CO <sub>2</sub> , O <sub>2</sub> , S, Cl, FI	Continuous Annually	To be agreed with Agency	Appropriate sampling methods will be adopted
Landfill Gas Flare Outlet	CO, NO <sub>x</sub> , SO <sub>2</sub> , TOC, HCL, HFL	Continuous Annually	To be agreed with Agency	Appropriate sampling methods will be adopted
Groundwater	Levels	Monthly	Trigger levels will be established	A minimum of one upgradient and three downgradient boreholes will be sampled quarterly.
	Quality	Quarterly		Standard and extensive list of parameters for groundwater will be used (see Table J.3)
Surface Water	Visual Inspection	Weekly	Trigger levels will be established.	Discharge from site drains will be inspected weekly and sampled quarterly (S1 to S3)
	Quality	Quarterly		The three sampling locations along the Carrigower River, as shown on Figure J-1 will be used for surface water monitoring  Standard and extensive list of parameters for Surface Water will be used (see Table J.3)
	Ecological Assessment	Annually	N/A	This will be carried out by a third party.

<b>Leachate</b>	Levels	Daily	N/A	Pressure Transducers will be used to record leachate levels.
	Quality	Quarterly	For leachate tankered to a Wastewater Treatment Plant:  pH 6-8 COD 25,000 ppm	Leachate composition will be monitored at the leachate holding tank.  Standard and extensive list of parameters (see Table J.3)
<b>Meteorological</b>	Precipitation Volume, Temperature, Wind Force & Direction, Evaporation, Atmospheric Pressure, Humidity	Daily	Not applicable	A meteorological station will be installed. Evaporation and evapotranspiration data will be obtained from a nearby Met station.

#### **A.1.10 Arrangements for the Prevention and Recovery of Waste arising from the Activity Concerned**

##### **This section relates to Article 12(1)(n)**

The imported (received) and reclaimed (excavated) waste will be run through a mobile (i.e. can be moved around site) recovery unit (MRU) or through plant in the Resource Recovery Building. This plant will be used to recover wastes to the maximum extent possible.

#### **A.1.11 Arrangements for the Off-Site Treatment of Solid or Liquid Wastes**

##### **This section relates to Article 12(1)(o)**

##### **Liquid Waste**

Leachate will be hauled, by a tanker to a County Council Waste Water Treatment Plant. The closest plant to the site is in Baltinglas, 5km from the site.

##### **Solid Waste**

If solid waste is imported (received) or reclaimed (excavated) at the facility, which is not acceptable under the terms of the licence, the waste will be transferred to an appropriate licenced or permitted facility.

### **A.1.12 Emergency Procedures to Prevent Unexpected Emissions**

#### **This section relates to Article 12(1)(p)**

Unauthorised/unexpected emissions may involve: odour and dust discharge into air; leachate discharge into groundwater or surface water; polluted runoff into groundwater and surface water; gas into the atmosphere; gas into the subsurface above background levels outside the site boundaries; and noise.

The above unexpected emissions are not anticipated, however, if they do occur, they will be dealt with as follows:

- Odours – capping of waste with inert material, biofilters will be attached to the Central Composting Facility, and an active gas collection and flaring system will be installed
- Dust – water spraying of surfaces
- Leachate release – pumps and tanks handling leachate will be controlled by pressure activated switches and groundwater extraction wells
- Groundwater – extractions wells
- Surface Water – grit chamber, oil interceptor, regular inspection
- Gas – passive systems, active pumping system and flaring, if required
- Noise – noise attenuation towards southern boundary

After hours there will be an emergency phone number that the public can ring, in case of a spill or similar emergency. The phone number will reach a senior person that will be assigned to deal with emergencies. The Gardai, or Fire Brigade or County Council will be contacted as appropriate.

### **A.1.13 Closure, Restoration and Aftercare of the Site**

#### **This section relates to Article 12(1)(q)**

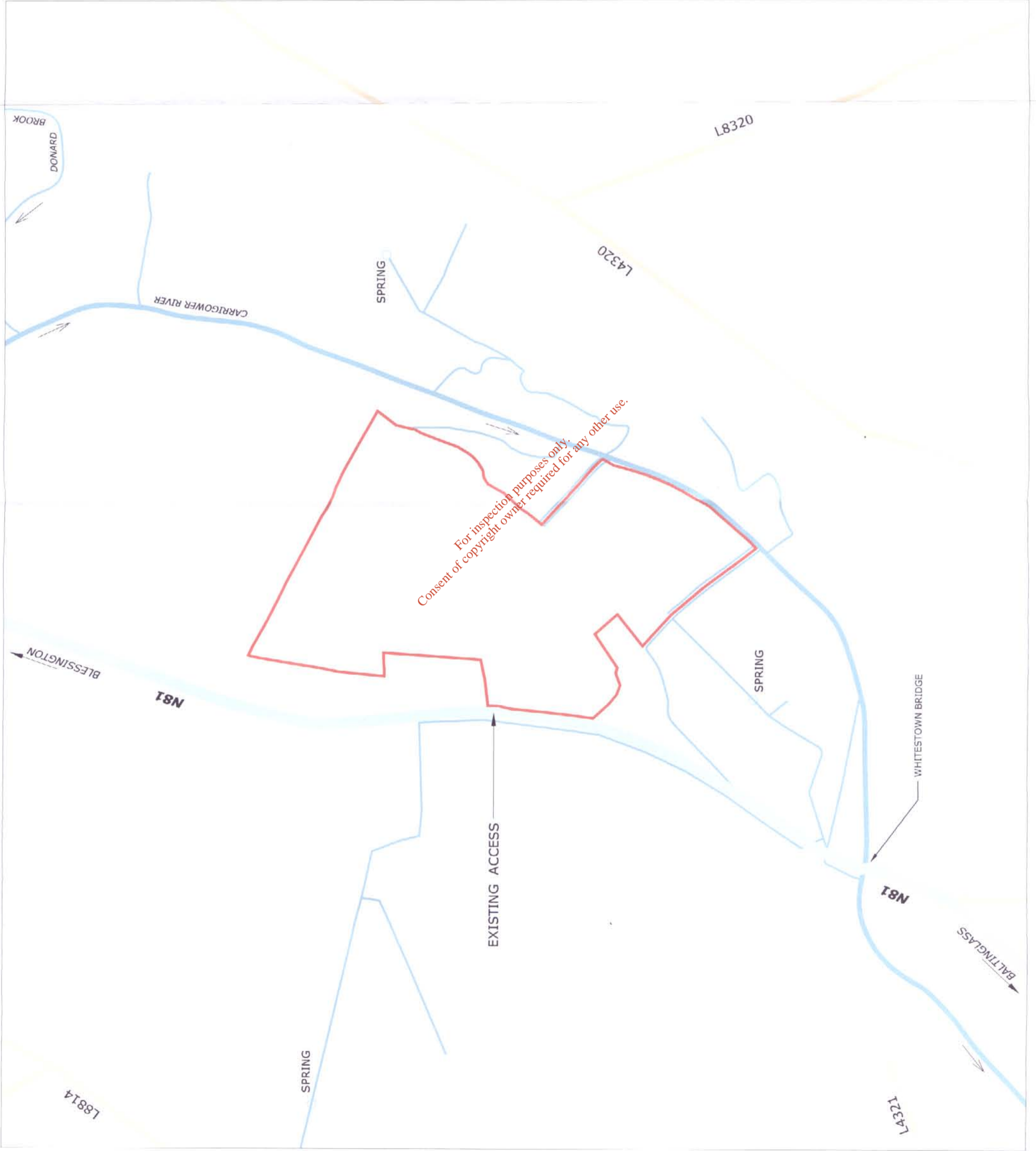
There is a proposed Landscape Plan (EIS, Volume I, Section 3.8) that involves planting trees and shrubs along former hedgerows and along the boundaries of the site. The landfill will be contoured into a dome and then capped with sub soil and topsoil. The surface will be seeded with grass to return the site back to its former condition prior to the commencement of gravel extraction.

A landscape maintenance and monitoring plan is proposed.

Aftercare will include at least annual inspections of the surface of the site, drains, monitoring installations and hedgerows.

There will be surveillance of the leachate pumping systems, which will have to be maintained for a number of years after closure.





- LEGEND**
- NATIONAL SECONDARY ROUTE
  - MINOR ROAD
  - MAIN WATER COURSE
  - MINOR WATER COURSE
  - APPLICATION SITE BOUNDARY

**NOTES**

1. FIELD BOUNDARIES MAY NOT REPRESENT CURRENT CONDITIONS

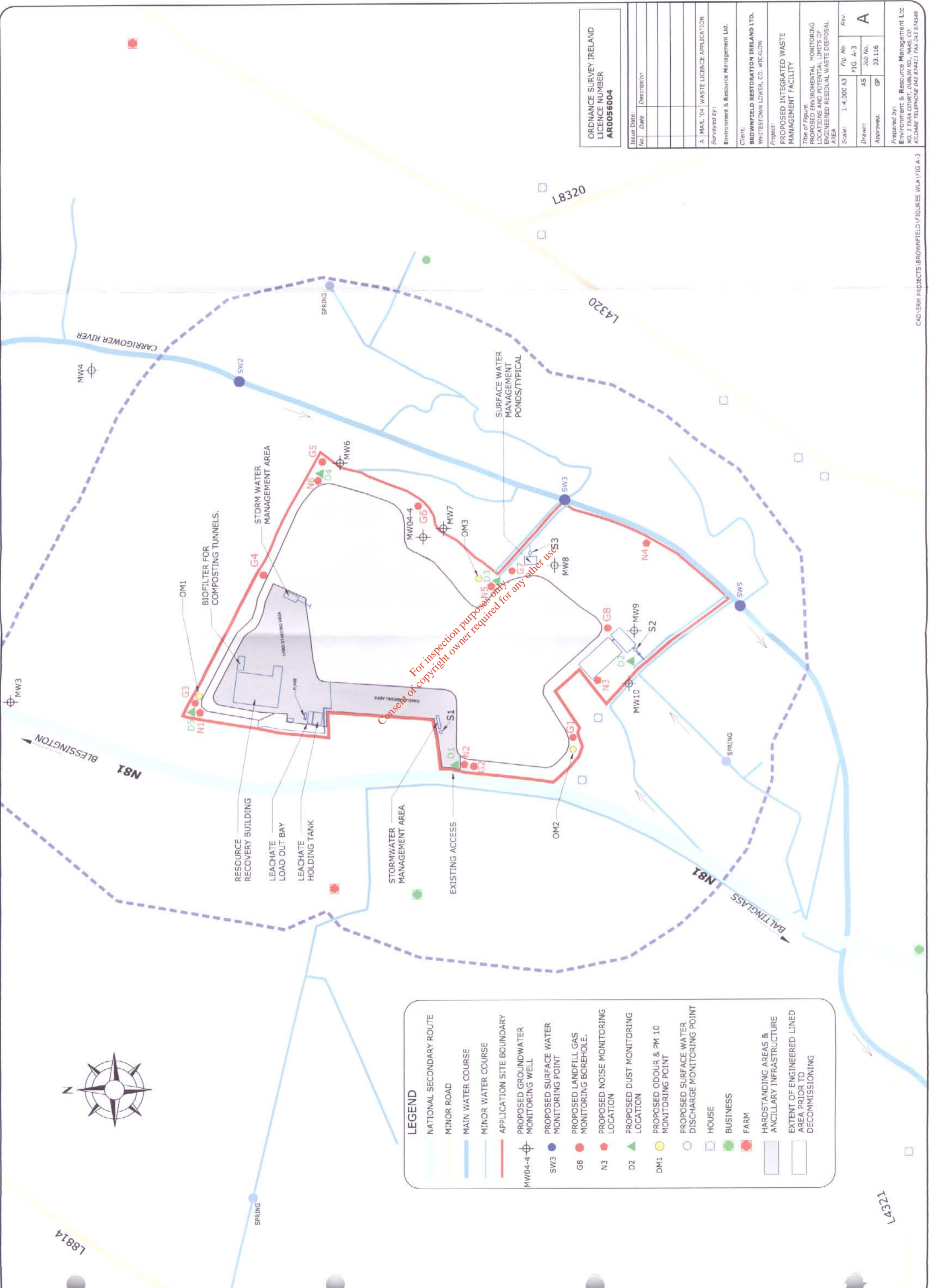
ORDNANCE SURVEY IRELAND  
LICENCE NUMBER  
**AR0056004**

Issue Date:		Description	
No.	Date		
A.	MAR. '04	WASTE LICENCE APPLICATION	
Surveyed by: Environment & Resource Management Ltd.			
Client: BROWNFIELD RESTORATION IRELAND LTD. WHITESTOWN LOWER, CO. WICKLOW			
Project: PROPOSED INTEGRATED WASTE MANAGEMENT FACILITY			
Title of Figure: LAND HOLDING & APPLICATION SITE BOUNDARY			
Scale:	1:5,000 A3	Fig. No.	Rev.
Drawn:	AS	FIG. A-2	A
Approved:	GP	Job No.	
			03 116

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LEGEND	
	NATIONAL SECONDARY ROUTE
	MINOR ROAD
	MAIN WATER COURSE
	MINOR WATER COURSE
	APPLICATION SITE BOUNDARY
	PROPOSED GROUNDWATER MONITORING WELL
	PROPOSED SURFACE WATER MONITORING POINT
	PROPOSED LANDFILL GAS MONITORING BOREHOLE.
	PROPOSED NOISE MONITORING LOCATION
	PROPOSED DUST MONITORING LOCATION
	PROPOSED ODOUR & PM 10 MONITORING POINT
	PROPOSED SURFACE WATER DISCHARGE MONITORING POINT
	HOUSE
	BUSINESS
	FARM
	HARDSTANDING AREAS & ANCILLARY INFRASTRUCTURE
	EXTENT OF ENGINEERED LINED AREA PRIOR TO DECOMMISSIONING



ORDNANCE SURVEY IRELAND LICENCE NUMBER AR0056004	
Issue Date:	Description:
No.	Date
A. MAR. '04 WASTE LICENCE APPLICATION	
Surveyed by: Environment & Resource Management Ltd.	
Client: BROWNFIELD RESTORATION IRELAND LTD. WHITESTOWN LOWER, CO. WICLOW	
Project: PROPOSED INTEGRATED WASTE MANAGEMENT FACILITY	
Title of Figure: PROPOSED ENVIRONMENTAL MONITORING LOCATIONS AND POTENTIAL LIMITS OF ENGINEERED RESIDUAL WASTE DISPOSAL AREA	
Scale:	1:4,000 A3
Fig. No.:	FIG. A-3
Rev.:	A
Drawn:	AS
Job No.:	03.116
Approved:	GP

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CAD/ERM PROJECTS/BROWNFIELD/FIGURES WLA/FIG A-3