

# NON-TECHNICAL SUMMARY

## 1. The Applicant's Proposal

Brownfield Restoration Ireland Ltd. (Company No. 375643) was formed in 2003 prior to the purchase of the lands at Whitestown Lower. The company directors, Mr. and Mrs. Stokes, of 7 Ardilea Downs, Mount Anville Road, Dublin 14 have a number of other land development companies. They have been involved in land development for in excess of 20 years.

In summary, BRI propose to remediate and restore the existing sand and gravel pit at Whitestown Lower, Co. Wicklow to its former status. This will include the following activities:

- recovery of previously deposited wastes;
- restoration of the disused pit to conform with the contours of surrounding landforms through the disposal of residual wastes in a fully engineered lined cell.

Also, it is expected that there will be opportunities to assist in the remediation and restoration of other nearby similar sites, at which there has been unauthorised waste management activities in the past.

Upon completion of remediation and restoration the site will be returned to agricultural use. All wastes excavated from the site will go through a recovery process (i.e. screening to remove fines, removal of recyclables etc.). It is proposed that the excavation of these wastes will be phased over time and will take place in less than a three-year period.

To fund restoration activities and to fully reinstate the site, it is proposed to accept non-hazardous C&I, Household Wastes and C&D wastes at the facility for recovery and residual disposal. It is also proposed to accept source separated organic (green waste and food waste) waste for composting and source separated recyclable wastes for further processing (i.e. sorting, baling) at the site.

Recovered materials generated from all waste streams will be utilised on-site where possible, for site restoration. Recovered wastes not suitable for use on-site will be exported off-site to an appropriate recovery/recycling facility.

## 2. Site Location and History of Site

Brownfield Restoration Ireland Ltd. (BRI) acquired a ca. 14.6 ha sand and gravel pit for redevelopment in Whitestown Lower, Co. Wicklow, in 2003.

The location of the site and an outline of the extent of the applicant's landholdings are depicted in Figure 1 & Figure 2 respectively. The site is located off the primary national route (N81), in the townland of Whitestown Lower, which is ca. 5 km north of Baltinglass, County Wicklow and ca. 20 km south of Blessington Co. Wicklow.

The lands have been used for sand and gravel extraction for many decades and as early as 1908 according to an OS 6" map for the area.

It is estimated that between 220,000 and 260,000 tonnes of waste were previously deposited at the site. These wastes represent a source of possible existing or future pollution of groundwater and surface waters. In addition, some of the wastes are biodegradable and thus, there is a high potential for methane and carbon dioxide gases and other trace gases to be generated during the natural biodegradation of the wastes, to be released into the environment.

### **3. Detailed Description of the Proposed Development**

The site boundary is depicted in Figure 3. An overview of the potential extent of the Proposed Integrated Waste Management Facility is presented on Figure 4. An application for a waste licence is being lodged for this facility.

BRI proposes that Facility operations will include:

- Continuing with the processing of the remaining sand and gravel deposits;
- 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.

The principal waste streams that could be managed at the BRI Facility in Whitestown Lower, West Wicklow are as follows:

- Wastes previously deposited at the subject site;
- Wastes arising from the excavation/remediation of other unauthorised landfill sites located along or close to the N81 corridor;
- C&I and C&D wastes arising in west Wicklow, south Kildare, north Carlow and the south Dublin area that should be processed to recover wastes prior to disposal;
- Treated residual wastes from other waste management facilities;

- Source separated dry recyclables and/or organic wastes that would arise in west Wicklow if suitable collection and programmes are introduced as envisaged in the County Wicklow Waste Management Plan 2000-2004 (CWWMP);
- Household and like commercial wastes from west Wicklow upon closure of the Rampere landfill estimated to be in ca. 4 to 5 years.

To ensure expedient treatment of the previously deposited wastes on the site and to provide capacity for treatment and recovery of other source separated wastes, the developer proposes a processing capacity of at least 180,000 tonnes per annum (t/a), made up approximately by the following waste streams

On site or imported C&I, C&D and Household Wastes	160,000 t/a
Source Separated Recyclable Wastes	10,000 t/a
Source Separated Organic Wastes	10,000 t/a
Total	180,000 t/a

It is proposed that the site and ancillary infrastructure will be engineered to include:

- Mobile Recovery Unit;
- Resource Recovery Building;
- Central Composting Facility;
- Paved access roads and hardstands with adequate lighting;
- Security fences and gates;
- Weigh bridge;
- Wheel wash;
- Laboratory facility;
- Site accommodation;
- Foul sewage treatment works;
- Waste inspection and quarantine areas;
- Plant sheds, garages and equipment compounds;
- Fuel storage areas;
- Fire control system, including water supply;
- Screening berms and enabling landscape;
- Litter fence;
- A fully engineered landfill meeting the standards set out by the EPA which include:
  - > Engineered liner on base and side slopes of the pit
  - > Leachate collection system
  - > Leachate recovery and holding systems
  - > Landfill gas management systems
  - > Final capping layers comprising soil and possibly geosynthetic materials.

#### 4. Need

There is a clear need to remediate sites at which unauthorised waste management activities have taken place in County Wicklow. To assist with assessing the need for the proposed remediation and restoration of the site and development of a waste management facility at Whitestown Lower, a number of sources of documentation were consulted as follows:

- Wicklow County Development Plan
- Waste Permits for Co. Wicklow
- Waste Licences for Co. Wicklow
- Waste Generation in Ireland & Co. Wicklow
- EU & National Waste Policy
- County Wicklow Waste Management Plan (2000-2004)

Using the information collected, it is concluded that there is an obvious and well-documented need for well-engineered waste management facilities in Ireland. This has arisen and exists because of a number of factors including:

- The economic boom in the country over the last decade has resulted in increases in population in urban area, which has resulted in a significant increase in all waste streams;
- Increased enforcement by local authorities and the EPA on illegal waste activities in the country;
- Tougher environmental legislation requiring the permitting or licensing of all waste disposal and recovery facilities in the country by either the Local Authority or the Environmental Protection Agency;
- Government Policy Documents i.e. "*Changing our Ways*" (September 1998) and "*Delivering Change*" (March 2002) highlighting the need for C&D Recycling, commercial waste recycling and engineered landfills in the country.

This proposed development comprises an integrated waste recovery and disposal facility to remediate a potential source of pollution, whilst at the same time enhance and supplement the waste-management infrastructure of County Wicklow, and help the Council fulfil government policy.

#### 5. Environmental Impact Assessment

The environmental impact of the proposed facility was assessed in detail. Research was undertaken at the site, including sampling, analysis and detailed interpretation at existing monitoring locations, as depicted on Figure 5. Specialist sub-contractors were retained as required. Table 1 describes the potential impacts (i.e. prior to implementing mitigation measures) of the proposed facility. Table 2 summarises the appropriate Mitigation Measures and Likely Significant Impacts.

**Table 1: Potential Impacts of the Proposed Facility**

<b>Item</b>	<b>Work completed</b>	<b>Potential impact of proposed facility</b>
<b>Air quality</b>	Dust sampling completed January 2004  Odour observations, between December 2003 – February 2004	<ul style="list-style-type: none"> <li>▪ Elevated dust</li> <li>▪ Potential odours during excavation of existing wastes and handling of other wastes</li> <li>▪ Landfill gas emissions</li> </ul>
<b>Climate</b>	Regional meteorological information collection	<ul style="list-style-type: none"> <li>▪ No impact</li> </ul>
<b>Cultural Heritage</b>	Studies undertaken in December 2003	<ul style="list-style-type: none"> <li>▪ No impact</li> </ul>
<b>Flora and Fauna</b>	Studies undertaken December 2003 – March 2004	<ul style="list-style-type: none"> <li>▪ Flora and fauna within site area proposed for development</li> <li>▪ Adjoining surface water habitat and associated floodplain</li> </ul>
<b>Traffic</b>	Study undertaken between January and March – based on desktop research and field visit	<ul style="list-style-type: none"> <li>▪ Increased traffic volumes on N81</li> </ul>
<b>Soils, Geology and Groundwater</b>	Study undertaken between December 2003 – March 2004	<ul style="list-style-type: none"> <li>▪ Migration of contaminants into subsurface</li> </ul>
<b>Landscape</b>	Study undertaken between February and March 2004	<ul style="list-style-type: none"> <li>▪ Raised landform following reinstatement of the site</li> </ul>
<b>Noise</b>	Study undertaken January 2004	<ul style="list-style-type: none"> <li>▪ Increase traffic volumes</li> <li>▪ Plant used during construction and operation of the facility</li> </ul>
<b>Surface water</b>	Study undertaken between December 2003 – March 2004	<ul style="list-style-type: none"> <li>▪ Runoff during excavation of previously deposited wastes</li> <li>▪ Runoff following final restoration of the landform</li> </ul>

**Table 2: Mitigation Measures and Likely Significant Impacts**

Item	Mitigation Measures	Likely Significant Impacts
<p><b>Air quality</b></p> <p><b>Dust</b></p> <p><b>Odour</b></p> <p><b>Waste Biodegradation Gas</b></p>	<p>Use of dust suppression measures including wheelwash facilities and water sprays at the site entrance/exit to prevent material being transferred to external roads (during both construction and operational phases).</p> <p>Handling of organic wastes indoors and use of bio-filters</p> <p>Active landfill gas management systems</p>	<p>None if mitigation measures are put into place</p> <p>Present within site boundary during excavation of previously deposited wastes</p> <p>None if mitigation measures are put into place</p>
<p><b>Climate</b></p>	<p>None Required</p>	<p>None</p>
<p><b>Cultural Heritage</b></p>	<p>None Required</p>	<p>None</p>
<p><b>Flora and Fauna</b></p>	<p>Comprehensive landscaping programme proposed</p> <p>Establishment of natural willow wood on the floodplain</p>	<p>No significant impacts if all mitigation measures are put in place (<i>Note: Habitats of low ecological value) within the development area will be removed.</i></p>
<p><b>Human Beings</b></p>	<p>Measures for dust, odour, traffic, groundwater, noise and surface water are dealt with in other sections</p>	<p>None if all mitigation measures are put into place</p>
<p><b>Traffic</b></p>	<p>Trucks entering the site will be utilised for the onward transport of materials required for export off-site</p>	<p>HGV traffic increase during lifetime of project marginally over 1%</p>
<p><b>Soils, Geology and Groundwater</b></p>	<p>Emplacement of a composite liner system</p> <p>Leachate collection infrastructure</p>	<p>None if mitigation measures are put into place</p>

	<p>To facilitate existing groundwater movement a high permeability drainage layer will be installed outside and beneath the landfill liner.</p> <p>Installation of oil interceptor</p> <p>Installation of proprietary system for treatment of sewage generated on-site</p> <p>Regular monitoring of groundwater (levels and chemical parameters)</p>	
<b>Landscape</b>	<p>Enabling landscape works to provide enhanced screening through hedge-plantings, woodland maintenance and berms</p> <p>Phased landscaping plans will be integrated with plans to develop the completed site into an amenity area.</p>	Final landform ca. 170 metres Ordnance Datum (Malin Head).
<b>Noise</b>	Screening berms, acoustic barriers	None if mitigation measures are put into place
<b>Surface water</b>	<p>Surface water that could potentially contain contaminants will be directed to an oil interceptor or holding ponds</p> <p>Clean surface water from completed and capped landfill areas and roof runoff will be directed to conventional soakaways and/or surface water management ponds</p> <p>Maintenance programmes will be in place to ensure surface water runoff does not erode the capping soils and flow into the waste.</p> <p>A surface water sampling programme at the will monitor any potentially associated changes in water chemistry.</p>	None if mitigation measures are put into place

## 6. ENVIRONMENTAL MONITORING

A number of waste licenses have been issued which encompass similar waste management activities to the proposed BRI facility. These waste licenses were reviewed to develop an appropriate monitoring regime. This regime is for guidance, and is likely to be superseded once a waste licence for the proposed facility is issued.

Figure 6 depicts the location of all proposed monitoring points at the proposed BRI facility. It is noted that the proposed monitoring locations are outside the proposed footprint for development. The proposed monitoring regime is presented in Table 3 below.

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**Table 3: Proposed Monitoring at the Proposed Landfill**

Media	Parameter	Frequency	ELV*	Comments
<b>Air</b>	Dust	Three times annually	350 mg/m <sup>3</sup> /day	It is proposed to monitor dust at the locations shown in Figure 6. 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 6.
<b>Landfill Gas Monitoring Boreholes</b>	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.
<b>Landfill Gas Site Offices &amp; Buildings</b>		Weekly		
<b>Landfill Gas Flare Inlet</b>	CH <sub>4</sub> , CO <sub>2</sub> , O <sub>2</sub> , S, Cl, Fl	Continuous Annually	To be agreed with Agency	Appropriate sampling methods will be adopted.
<b>Landfill Gas Flare Outlet</b>	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.
<b>Groundwater</b>	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
<b>Surface Water</b>	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 6 will be used for surface water monitoring.  Standard and extensive list of parameters for Surface Water will be used
	Ecological Assessment	Annually	N/A	This will be carried out by a third party.

**Table 3: Proposed Monitoring Regime at Brownfield Facility (cont'd)**

	Levels	Daily	N/A	Pressure Transducers will be used to record leachate levels.
<b>Leachate</b>	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 4.3)
<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.

\* ELV - Emission Limit Value.

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