

ATTACHMENT G1 – RESOURCE USE AND ENERGY EFFICIENCY

The quantities of raw materials to be consumed in the restoration of the former quarry at Blackhall are summarised in Section 2.3.3 of the Environmental Impact Statement.

The waste used in the site restoration works comprises inert soil, stone and/or recycled construction and demolition waste. No process related raw materials, intermediates or products etc. are currently or will in future be used or generated by waste activities at the site. Given the absence of putrescible waste, there will be no requirement to use rodenticides and insecticides to control vermin and insects.

Small scale energy requirements for site offices, lighting, heating etc. will be provided by a temporary generator or a connection from overhead electrical power lines.

Earthworks plant placing and compacting the imported soil and stone will be powered by diesel fuel, as will the crushing and screening plant used to recycle inert construction and demolition waste. All diesel fuel used at the application site will be stored in double skin bowers located on the hardstanding area.

As none of the materials to be placed at the site are biodegradable, no landfill gas will be generated. Accordingly, no provision is made for collection of landfill gas or for a power generation unit.

Assuming inert waste is imported, placed and recycled at the applications site for 50 weeks each year over a 15 year period (750 weeks) the diesel fuel consumed by the placement, compaction and recovery of inert waste and ancillary activities is assessed as follows:

	Fuel Consumption	Fuel Consumed
Waste Placement and Compaction		
Bulldozer	350 litres / week	262,500 litres
Mechanical Excavator	300 litres / week	225,000 litres
Waste Recovery		
Crushing Plant	350 litres / week	262,500 litres
Screening Plant	300 litres / week	225,000 litres
Other		
Generator	150 litres / week	112,500 litres
Quad Bike	10 litres / week	7,500 litres
Site Vehicles (1 No.)	40 litres / week	30,000 litres
Total Fuel Consumption	1500 litres / week	1,125,000 litres

Note that the assessed fuel consumption is based on the following assumptions :

- (i) backfilling of the application site continues at the same rate as heretofore;
- (ii) there will no improvement in fuel efficiency of mechanical plant, generator and site vehicles over the operational life of the facility
- (iii) no alternatives to diesel fuel will become commercially available over the operational life of the facility.

The proposed placement and compaction of approximately 4,000,000 tonnes of inert soil and stone and recovery of approximately 225,000 tonnes of inert construction and demolition waste over a 15 year period is therefore estimated to consume a total of 1,125,000 litres of diesel fuel.

ATTACHMENT H1 WASTE TYPES AND QUANTITIES

This Waste Licence Application provides for the restoration of a former quarry in the townland of Blackhall, Punchestown, Naas, Co. Kildare using imported inert soils and recycled inert construction and demolition waste.

The total volume of inert material to be placed at the site is 2,240,000m³. The breakdown of this volume amongst the various restoration phases is shown on the site phasing drawings, Figures 2.5 to 2.15 of the Environmental Impact Statement. Assuming an in-situ density of 1.8tonnes/m³, this equates to approximately 4,000,000tonnes of inert material to be placed at the site.

Assuming backfilling continues at current rates (approximately 250,000–275,000 tonnes of material placed per annum), the estimated life of the waste facility will be approximately 15 years. As it is likely that there will be some variation around the average rate of backfilling over the operational life of the facility, provision is made in the waste licence application to use up to a maximum of 300,000 tonnes of inert material for restoration purposes in any one calendar year.

The Applicant estimates that approximately 15% of the inert materials imported to the existing waste facility comprises construction and demolition waste and is recovered using conventional crushing and screening plant. Accordingly provision is made in the waste licence application to import and recover of up to a maximum of 45,000 tonnes of inert construction and demolition waste in any one calendar year. Assuming that construction and demolition waste continues to account for approximately 15% of the materials imported to site, approximately 600,000 tonnes will be recovered at the application site over the operational life of the facility.

It is envisaged that some of the recovered inert secondary aggregate will be re-used in-situ in the construction of internal haul roads and hardstanding areas and backfilling of existing groundwater ponds. Any excess material recovered at the facility will be exported off-site for re-use as secondary aggregate on construction projects.

The inert materials to be accepted at the site for use in backfilling / recovery activities are identified by their European Waste Catalogue reference number below

EWG Code	Description
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixture of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 05 04	Soil and stones other than those mentioned in 17 05 03

The expected annual quantities are indicated for the five year period 2008-2012 below :-

Year	Inert soil / stones for recovery (tonnes / annum)	C+D waste for recovery (tonnes / annum)	Total annual quantity of waste (tonnes / annum)
2008	275,000	45,000	320,000
2009	275,000	45,000	320,000
2010	275,000	45,000	320,000
2011	275,000	45,000	320,000
2012	275,000	45,000	320,000

ATTACHMENT H2 WASTE ACCEPTANCE PROCEDURES

The proposed waste acceptance and handling procedures to be implemented during the site restoration works are described in the following sections of the Environmental Impact Statement :

Section 2.4 Waste Acceptance and Handling

Details are also provided in the Environmental Management Plan, reproduced as Attachment C2 of this Waste Licence Application.

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ATTACHMENT H3 WASTE HANDLING PROCEDURES

The proposed waste acceptance and handling procedures to be implemented during the site restoration works are described in the following sections of the Environmental Impact Statement :

Section 2.4 Waste Acceptance and Handling
Section 2.7 Final Restoration and Aftercare

Details are also provided in the Environmental Management Plan, reproduced as Attachment C2 of this Waste Licence Application.

Targets for reductions in the quantities of untreated biodegradable municipal waste sent to landfill outlined in Council Directive 1999/31/EC (the 'Landfill Directive') do not apply to the proposed restoration scheme as no biodegradable waste will be accepted at or disposed of at the application site.

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ATTACHMENT I1 – ASSESSMENT OF ATMOSPHERIC EMISSIONS

Details of the existing atmospheric environment and an assessment of the impact of the proposed restoration scheme and the associated atmospheric emissions (principally dust) are provided in Section 7 of the Environmental Impact Statement.

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ATTACHMENT I2 – ASSESSMENT OF IMPACT ON RECEIVING SURFACE WATER

All existing water features within the application site are considered to be groundwater features. Meteoric water falling over existing and/or future landforms at the application site will either run over the surface to groundwater ponds forming in closed depressions within the site or will percolate through backfilled and/or natural soil to the underlying groundwater table.

There have been no emissions to watercourses or ponds beyond the boundary of the application site in undertaking site restoration works to date. At no time during the future restoration works will surface water run-off be directed to the nearby River Morell or any watercourses or ponds beyond the site boundary.

Details of the existing surface water environment and the impact of the proposed remediation scheme and associated emissions thereon are provided in Section 6 of the Environmental Impact Statement.

The existing / proposed monitoring regime at surface water bodies is outlined in Section 2.6.10 of the Environmental Impact Statement.

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ATTACHMENT I4 – ASSESSMENT OF IMPACT ON GROUND / GROUNDWATER

As the restoration of the former gravel quarry at Blackhall entails placement and backfilling using only inert soil and recycled construction and demolition wastes, no leachate will be generated by percolation of rainfall through the backfilled and/or natural ground. Consequently, there is no requirement for a lining system or leachate collection system at this waste facility.

Details of the existing groundwater environment and the impact of the proposed restoration works and associated emissions thereon are provided in Section 6 of the Environmental Impact Statement.

The existing / proposed groundwater monitoring regime is outlined in Section 2.6.4 of the Environmental Impact Statement.

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ATTACHMENT I5 – GROUND OR GROUNDWATER CONTAMINATION

A ground investigation was completed at the application site in November 2007 to investigate the nature of the inert fill materials and the surrounding ground and groundwater conditions. The details of the site investigation are reported in the Ground Investigation Report reproduced as Appendix 5.1 of the Environmental Impact Statement. The available ground investigation information indicates that the general subsoil profile across the application site comprises varying depths of inert fill materials (Made Ground) overlying in-situ sand and gravel deposits at or below the water table. Details of the existing soil and subsoil environment are provided in Section 5 of the Environmental Impact Statement.

Available groundwater test data indicates that there is no disparity between groundwater quality of samples recovered at the upgradient and downgradient end of the application site. This suggests that historical and/or ongoing site restoration activities have had no adverse impact on groundwater quality.

As the restoration of the former gravel quarry at Blackhall entails placement and backfilling using only inert soil and recycled construction and demolition wastes, no leachate will be generated by percolation of rainfall through the backfilled and/or natural ground. Further information about existing groundwater quality and the likely impact of the restoration scheme are presented in Section 6 of the Environmental Impact Statement.

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ATTACHMENT I6 – NOISE IMPACT

Details of the existing noise environment and the noise impacts of the proposed restoration scheme are provided in Section 8 of the Environmental Impact Statement.

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ATTACHMENT I7 – ASSESSMENT OF ECOLOGICAL IMPACT AND MITIGATION MEASURES

Details of the existing ecological environment and the impact of the proposed restoration scheme and associated emissions thereon are provided in Section 4 of the Environmental Impact Statement.

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ATTACHMENT J – ACCIDENT PREVENTION AND EMERGENCY RESPONSE

An assessment of the principal environmental hazards and risks associated with the proposed remediation scheme and the contingency measures to be implemented in the event of an incident are provided in the Outline Contingency Plan reproduced in Appendix 2.1 of the Environmental Impact Statement.

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ATTACHMENT K– REMEDIATION, DECOMMISSIONING, RESTORATION AND AFTERCARE

Details of the proposed restoration of the application site and the associated decommissioning and aftercare proposals are provided in Sections 2.3 and Section 2.7 of the Environmental Impact Statement.

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ATTACHMENT L1 – STATUTORY REQUIREMENTS
SECTION 40(4) OF WASTE MANAGEMENT ACTS 1996-2007

In developing the proposed remediation scheme, Roadstone Dublin has had regard to the requirements of Section 40(4) of the Waste Management Acts 1996-2007. These are addressed as follows: -

- a) *Any emissions from the recovery or disposal activity in question ("the activity concerned") will not result in the contravention of any relevant standard, including any standard for an environmental medium, or any relevant emission limit value, prescribed under any other enactment.*

As the materials used to backfill and restore the application site are inert and non-biodegradable, they do not generate leachate or landfill gas. Accordingly, activities at the site presents only very low risks of groundwater contamination, no risk of landfill gas emissions and no risk of bird, litter, odour or vermin nuisance.

During the restoration and operation of the site, there is a small risk of groundwater pollution from the following potential sources:

- accidental spillage of fuels and lubricants by construction plant placing the inert fill and other operational procedures;
- increase in suspended solids and potential for contaminated runoff entering groundwater during development of the site; and
- rogue loads of contaminated material being deposited at the site.

In order to minimise the risk of pollution to groundwater occurring during the site restoration works, a number of mitigation measures are proposed. These measures give effect to Council Directive 80/68/EEC on the protection of groundwater against pollution and are outlined in Section 6.4.1 of the Environmental Impact Statement.

Noise and dust levels from established site activities do not exceed recognised threshold emission limits for extractive industry nor is it envisaged that they will do so in the future. Environmental Management Systems will be put in place to minimise and control emissions to the environment during the restoration works, refer to relevant sections of the Environmental Impact Statement.

- b) *The activity concerned, carried on in accordance with such conditions as may be attached to the licence, will not cause environmental pollution; if the activity concerned involves the landfill of waste, the activity carried on in accordance with such conditions as may be attached on the licence, will comply with Council Directive 1999/31/EC on the landfill of waste.*

The recovery of inert soil and stones is necessary for the restoration of the application site to its previous landform and presents little or no risk to the natural environment. The activity will not generate any leachate or landfill gas.

Inert waste testing, inspection and handling procedures will be put in place to ensure that only waste which is demonstrably inert will be placed at this site. Environmental Management Systems will be put in place to minimise the risk of environmental pollution arising in the course of the restoration works, refer to relevant sections of the Environmental Impact Statement.

The Applicant undertakes to execute the restoration works at the application site in accordance with such further conditions as may be attached to the Waste Licence to prevent environmental pollution.

- c) *The best available technology not entailing excessive costs will be used to prevent or eliminate or, where that is not practicable, to limit, abate or reduce an emission from the activity concerned; the activity concerned is consistent with the objectives of the relevant waste management plan or the hazardous waste management plan, as the case may be, and will not prejudice measures taken by the relevant local authority or authorities for the purpose of the implementation of such plan.*

As the materials used to restore the site are inert, there is little or no risk of potentially contaminated emissions to ground, groundwater or the atmosphere. Consequently, there is little requirement to apply best available technologies to limit, abate and/or reduce ground and/or groundwater emissions. Emphasis will be placed on implementation of robust waste acceptance and inspection procedures to ensure that only inert wastes continues to be used for site restoration purposes at the site.

The proposed backfilling and restoration of the application site will, for the most part, only require utilisation of conventional HGV trucks and earthmoving equipment. Recycling of inert construction and demolition wastes will require use of conventional crushing and screening equipment. The use of this plant and equipment will generate noise and dust emissions. Noise and dust suppression techniques will be employed at the site as and when required, refer to Sections 7 and 8 of the Environmental Impact Statement.

Section 14 of the Kildare County Development Plan 2005-2011 addresses the issue of restoration of former quarry sites. It states that it is an objective of the plan that '*all existing workings be rehabilitated to suitable land uses*' and that backfilling with inert materials is the preferred method (Objective EI7, Section 14.8).

The policies and objectives for the future management of construction and demolition waste in County Kildare are discussed in Section 8.12.7 of the current County Kildare Waste Management Plan. The plan states that there is unlikely to be any reduction in the quantity of construction and demolition waste imported to the county for as long as activity in the construction sector remains at a relatively high level. It also identifies a number of direct and indirect problems that have arisen in the county owing to the lack of suitable waste facilities for the acceptance of soils including

- (i) a prevalence of small scale unauthorised raising of one-off sites for development purposes
- (ii) unsuitable lands in low-lying areas with poor road networks being filled
- (iii) unauthorised waste activities
- (iv) additional costs and delays being borne by the construction sector
- (v) additional costs and delays to local authority works and projects

In order to deal with existing and future quantities of construction and demolition waste quantities, the plan envisages that there should be at least 10 strategically located permitted waste facilities in the county each accepting in excess of 200,000 tonnes of inert soil per annum. At the time the plan was drafted in 2005, there were only four or five such facilities in the county.

The plan puts forward a number of recommendations in respect of permitted waste facilities for the acceptance of inert material. These are as follows :

- (i) waste permits for importation of inert waste soils are considered to be recovery activities. Therefore it is important that there is beneficial re-use of the soil. Raising land that is already in a reasonable condition would not generally be acceptable. Raising of land may be considered in conjunction with planning for restoration of a worked out quarry, raising of poor unproductive land in agricultural / recreational terms and raising of development land
- (ii) generally, the facility should accept only the minimum amount of waste required to carry out works to a satisfactory standard.
- (iii) in accordance with Article 16 of the Waste Management (Permit) Regulations 1998, a hydrogeological report must be submitted, prepared by a suitably qualified person, assessing the risk to groundwater from the material proposed to be deposited at the facility. This report must detail proposals to ensure the traceability of the material imported into the site and its place of origin, sampling procedures to be carried out on the material imported into the proposed facility and monitoring to be carried out on surface waters / groundwaters at the proposed facility.
- (iv) A site survey is required showing the existing ground levels and the proposed levels for the facility. A void space calculation is also required.
- (v) In terms of site selection, the following hierarchy shows the favoured option in order of preference:

- re-use of material where produced
- quarry restoration
- land reclamation
- agricultural / recreational use
- raising of development land
- raising of sites for one-off houses.

It is asserted that continuation of existing backfilling, restoration and recovery activities at the former sand and gravel quarry at Blackhall is consistent with the stated objectives of the current Kildare Waste Management Plan (2005-2011).

- d) *If the applicant is not a local authority, the cooperation of a borough that is not a country borough, or the council or an urban district, subject to subsection (8), he or she is a fit and proper person to hold a waste licence.*

Refer to Attachment L2.

- e) *The applicant has complied with any requirements under Section 53.*

Behans Land Restoration will furnish such particulars, and make such financial provisions as are deemed necessary by the Agency in respect of the implementation and/or completion of the proposed restoration scheme.

- f) *Energy will be used efficiently in the carrying on of the activity concerned.*

Small scale energy requirements for site offices, lighting, heating, security cameras will be provided by a connection from overhead electrical power lines or, failing that, from a temporary generator. Plant and equipment required to undertake the proposed restoration scheme will be powered by diesel fuel. Energy use will be minimised insofar as practicable.

- g) *Any noise from the activity concerned will comply with, or will not result in the contravention of, any regulations under Section 106 of the Act of 1992.*

Noise emissions from HGV's, plant and equipment will be controlled and monitored to comply with such limits and conditions as may be imposed by a Waste Licence issued in respect of the proposed restoration works. In operating under waste permits previously issued by Kildare County Council, noise emissions at the application site have been maintained below the recognised threshold average ambient noise level of 55L_{Aeq} dB(A).

- h) *Necessary measures will be taken to prevent accidents in the carrying on of the activity concerned and, where an accident occurs, to limit its consequences for the environment.*

An assessment of the principal environmental hazards and risks associated with the proposed restoration scheme and the contingency measures to be implemented in the event of an incident are provided in the Outline Contingency Plan reproduced in Appendix 2.1 of the Environmental Impact Statement.

- i) *Necessary measures will be taken upon the permanent cessation of the activity concerned (including such a cessation resulting from the abandonment of the activity) to avoid any risk of environmental pollution and return the site of the activity to satisfactory state.*

Details of the capping, decommissioning and aftercare activities to be undertaken on completion of the site restoration works are provided in Section 2.3.14 and Section 2.7 of the Environmental Impact Statement.

As the materials used to restore the site are inert, there will be no requirement to provide for long-term measures to monitor and/or prevent risk of long term pollution arising at the site.

In developing the proposed restoration scheme, Behans Land Restoration has considered the requirement to use Best Available Techniques, where possible and practicable. The considerations referred to in ANNEX IV of Council Directive 96/61/EC on Integrated Pollution Prevention and Control are addressed as follows :

1. *The use of low waste technology*

The proposed backfilling and restoration of the application site will, for the most part, only require utilisation of conventional HGV trucks and earthmoving equipment. As the materials used to restore the site are inert, there is little scope to apply best available technologies to limit, abate and/or reduce emissions. In controlling emissions from the site, greatest emphasis will be placed on Environmental Management Systems.

2. *The use of less hazardous substances.*

No hazardous or non-hazardous materials (other than diesel fuel and engine oils) will be used in restoring the application site. There is currently no alternative to diesel fuel to power earthmoving equipment or crushing / screening plant.

3. *The furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate.*

Given that the materials used for site restoration purposes are inert and are being effectively re-used for a beneficial purpose, there is no scope for further materials recovery and/or recycling.

4. *Comparable processes, facilities or methods of operation which have been tried with success on an industrial scale.*

No alternative successful soil recovery activity known of.

5. *Technology advances and changes in scientific knowledge and understanding*

No alternative soil recovery technologies known.

6. *The nature, effects and volume of the emissions concerned*

As the materials used for backfilling and site restoration purposes are inert, there will be no potentially contaminated emissions to ground, groundwater and/or the atmosphere. Noise and dust emissions will be controlled and monitored to comply with such limits and conditions as may be imposed by a Waste Licence issued in respect of the proposed restoration works.

7. *The commissioning dates for new or existing installations*

There are numerous existing soil recovery operations currently in operation within the Greater Dublin Area. These facilities operate in a commercial environment and meet the demand for soil recovery generated largely by the construction industry. Soil recovery facilities typically have a finite capacity. Additional facilities are required on an ongoing basis to replace closed facilities and ensure the existing market continues to function normally.

8. *The length of time needed to introduce the best available technique*

As previously noted, the materials used to restore the site are inert and employ conventional, relatively low technology plant and equipment. As such there is little scope or requirement to development of new waste management technologies or techniques to provide enhanced environmental protection.

9. *The consumption and nature of raw materials (including water) used in the process and their energy efficiency*

The only materials consumed by the proposed on-site remediation activities are diesel fuel and engine oils used to power plant and equipment. No other hazardous or non-hazardous materials will be required on site.

Small scale energy requirements for site offices, lighting, heating, security cameras will be provided by a connection from overhead electrical power lines, of failing that, from a temporary generator. Energy use will be minimised insofar as practicable.

10. *The need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it.*

As previously noted, the materials used to restore the site are inert. The risk of potentially contaminated emissions to ground, groundwater and the atmosphere are therefore very low. Emissions of noise and dust will be controlled and kept to a minimum during the site restoration works by applying best practice site management techniques.

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ATTACHMENT L2 – STATUTORY REQUIREMENTS
SECTION 40(7) OF WASTE MANAGEMENT ACTS 1996-2007

Behans Land Restoration Ltd. considers that it is a fit and proper person to hold a Waste Licence and has provided the requisite information required by Section 40(7) of the Waste Management Acts 1996-2007 to demonstrate same below :

- a) *Indicate whether the applicant or other relevant person has been convicted under the Waste Management Acts 1996 to 2003, the EPA Act 1992 and 2003, the Local Government (Water Pollution) Acts 1977 and 1990 or the Air Pollution Act 1987.*

Behans Land Restoration has not been convicted of any offence under the Waste Management Acts 1996 -2007, the Local Government (Water Pollution) Acts 1977-1990, the Environmental Protection Agency Act 2003 or the Air Pollution Act 1987.

- b) *Provide details of the applicant's technical knowledge and/or qualifications, along with that of other relevant employees.*

The managing director of Behans Land Restoration, John Behan, has been responsible for all aspects of site management from the outset of the restoration works at the application site in 2001 including planning, operational, environmental, legal and financial aspects. He is in attendance at the site on a permanent, full time basis. As freehold owner of much of the application site, he has a vested interest in ensuring the restoration works are executed in a controlled and timely fashion and that no environmental risk arises.

The effectiveness of his role to date is demonstrated by

- (i) an absence of complaints from local residents
- (ii) absence of contaminated materials in recent trial pits across backfilled area
- (iii) consistency in water quality up and down hydraulic gradient of the site.

At the present time, it is envisaged that John Behan will remain in attendance at the application site on a permanent, full time basis until such time as the restoration works are completed. In overseeing the remainder of the works, he will be assisted by appropriately qualified external consultants as and when required (refer to Attachment C1).

- c) *Provide information to show that the person is likely to be in a position to meet any financial commitments or liabilities that may have been or will be entered into or incurred in carrying on the activity to which the application relates or in consequence of ceasing to carry out that activity.*

Behans Land Restoration will meet the cost of any ongoing or future legal and/or environmental responsibilities from within its own resources and due allowance for same has been made in the company's business plan. No available source of external funding will be required.

The company and/or its directors can provide such guarantees and undertakings as the Agency considers to be necessary to meet any future financial obligations incurred in undertaking the proposed waste activities at the application site.