Murphy Environmental
Hollywood Ltd

Response to Notice for the purposes of Section 76(A) of the Waste Management Act, as amended

MEHL Integrated Waste Management Facility
Hollywood Great, Nag's Head, Naul, Co. Dublin

EPA APPLICATION W0129-03

March 2014

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Murphy Environmental Hollywood Ltd.

(MEHL)

Proposed Integrated Waste Management Facility

EPA REF. W0129-03

Response to Notice for the purposes of Section 76(A) of the Waste Management Act, as amended

MARCH 2014

Prepared by:

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For the Attention of
Ms. Noeleen Keavey
Administration Officer
Office of Climate, Licensing & Resource Use
Environmental Protection Agency
PO Box 3000
Johnstown Castle
Co. Wexford

Our Ref.: W0129-03/130314
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Date: 13th March 2014

Dear Ms. Keavey,

Re: Murphy Environmental Hollywood Ltd. (MEHL), EPA Ref. W0129-03
Notice for the purposes of Section 76(A) of the Waste Management Act, as amended (your correspondence of 18th February 2014)

I refer to your notice for the purposes of Section 76(A) of the Waste Management Act, as amended, regarding an application by Murphy Environmental Hollywood Ltd., Hollywood Great, Nag's Head, Naul, Co. Dublin (your correspondence of 18th February 2014; copy attached in **Tab 2**).

The Applicant made immediate arrangements to submit the required documents; please find enclosed 1 signed original and 1 copy in hardcopy format, and 2 copies of all files in electronic searchable PDF format on CD-ROM; I confirm that the content of the electronic files on the CD-ROM is a true copy of the original.

The information prescribed in Regulation 9 of the EPA (Industrial Emissions) (Licensing) Regulations 2013 is considered as follows:

9. (1) An application for a licence shall be submitted to the headquarters of the Agency and shall be in such form as may be determined by the Agency which may include electronic submission via the website of the Agency.

An application was made by MEHL, in compliance with EPA requirements, in December 2010. The application was subsequently deemed to fall under the requirements of the Industrial Emissions licensing regime.

A register of documentation submitted to the Agency as part of the application for an integrated waste management facility at MEHL (EPA ref. W0129-03) is included in **Tab 3**.

(2) Without prejudice to the generality of paragraph (1), an application for a licence shall—
(a) give:

(i) the name, address and telephone number of the applicant and, if different, any address to which correspondence relating to the application should be sent and, if the applicant is a body corporate, the address of its registered or principal office,

Included in Waste Licence Application, December 2010 (Section B); submitted to the Agency 17/12/2010. Further information submitted to the Agency 02/07/2013.

(ii) the location or postal address (including, where appropriate, the name of the relevant townland or townlands) of the premises to which the activity relates,

Included in Waste Licence Application, December 2010 (Section B); submitted to the Agency 17/12/2010.

(iii) the name of the planning authority in whose functional area the activity is or will be carried on, and

Included in Waste Licence Application, December 2010 (Section B); submitted to the Agency 17/12/2010.

(iv) in the case of a discharge of any trade effluent or other matter (other than domestic sewage or storm water) to a sewer of a sanitary authority, give the name of the sanitary authority in which the sewer is vested or by which it is controlled,

Included in Waste Licence Application, December 2010 (Section B); submitted to the Agency 17/12/2010.

(b) give:
(i) in the case of an established activity, the number of employees and other persons working or engaged in connection with the activity on the date after which a licence is required and during normal levels of operation, or

Included in the EIS, December 2010 (Chapters 5, 7); submitted to the Agency 17/12/2010.

(ii) in any other case, the gross capital cost of the activity to which the application relates,

Not applicable.

(c) specify the relevant class or classes in the First Schedule to the Act of 1992 to which the industrial emissions directive activity relates,

Correspondence submitted to the Agency 14/08/2013.

(d) in accordance with section 87(1B)(a) of the Act of 1992 in the case where an application for permission for the development comprising or for the purposes of the industrial emissions directive activity to which the application for the licence relates is currently under consideration by the planning authority concerned or An Bord Pleanála, a written confirmation from the planning authority or An Bord Pleanála, as appropriate, of that fact together with either:

Included in Waste Licence Application, December 2010; submitted to the Agency 17/12/2010. Further information (An Bord Pleanála decision) submitted to the Agency 28/05/2012.

(i) a copy of the environmental impact statement, 2 hard copies and 2 electronic copies or in such form as may be specified by the Agency, that was required to be submitted with the application for planning permission, or

Submitted to the Agency 17/12/2010, in compliance with the Agency's requirements.

(ii) a written confirmation from the planning authority or An Bord Pleanála that an environmental impact assessment is not required by or under the Act of 2000,

Not applicable.

(e) in accordance with section 87(1B)(b) of the Act of 1992 in the case where permission for the development comprising or for the purposes of the industrial emissions directive activity to which the application for the licence relates has been granted, a copy of the grant of permission together with either:

An Bord Pleanála decision submitted to the Agency 28/05/2012.

(i) a copy of the environmental impact statement, 2 hard copies and 2 electronic copies or in such form as may be specified by the Agency, that was required to be submitted with the application for permission, or

Submitted to the Agency 17/12/2010.

(ii) a written confirmation from the planning authority or An Bord Pleanála that an environmental impact assessment was not required by or under the Act of 2000,

Not applicable.

(f) specify the raw and ancillary materials, substances, preparations, fuels and energy which will be produced by or utilised in the activity,

Included in Waste Licence Application, December 2010 (Section G); submitted to the Agency 17/12/2010.

(g) describe the plant, methods, processes, ancillary processes, abatement, recovery and treatment systems, and operating procedures for the activity,

Included in Waste Licence Application/EIS (various sections), December 2010; submitted to the Agency 17/12/2010.

(h) indicate how the requirements of section 83(5)(a)(i) to (v) and (vii) to (xa) of the Act of 1992 shall be met, having regard, where appropriate, to any relevant specification issued by the Agency under section 5(3)(b) of that Act or any applicable best available techniques (BAT) conclusions adopted in accordance with Article 13(5) of the Industrial Emissions Directive and the reasons for the selection of the arrangements proposed,

Included in Waste Licence Application/EIS, December 2010 (various sections); submitted to the Agency 17/12/2010. Further information submitted to the Agency 08/08/2011, 21/05/2013, 17/10/2013.

The European Commission Joint Research Centre, Institute for Prospective Technological Studies (IPTS) provides a list of reference documents that have been drawn (or are planned to be drawn) as part of the exchange of information carried out in the framework of Article 13(1) of the Industrial Emissions Directive (IED, 2010/75/EU) (available at http://eippcb.jrc.ec.europa.eu/reference/).

It lists the Best Available Techniques (BAT) reference documents, the so-called BREFs (as well as a few other reference documents) that have been adopted under both the IPPC Directive (2008/1/EC) and the IED. For BREFs adopted under the IED, the table shows in the column "Adopted document" also the BAT conclusions adopted according to IED Article 13(5). The "BAT conclusions" is a document containing the parts of a BAT reference document laying down the conclusions on best available techniques. According to Article 14(3) of the IED, BAT conclusions shall be the reference for setting the permit conditions to installations covered by the Directive.

See **Tab 4**.

(i) give particulars of the source, nature, composition, temperature, volume, level, rate, method of treatment and location of emissions, and the period or periods during which the emissions are, or are to be, made,

Included in Waste Licence Application/EIS, December 2010 (various sections); submitted to the Agency 17/12/2010. Updated monitoring locations drawing submitted to Agency with Article 16 information, 17/10/13; included herewith in revised Non-Technical Summary (**Tab 6**).

(j) identify monitoring and sampling points and outline proposals for monitoring emissions and the environmental consequences of any such emissions,

Included in Waste Licence Application/EIS, December 2010 (various sections); submitted to the Agency 17/12/2010. Updated monitoring locations drawing submitted to Agency with Article 16 information, 17/10/13; included herewith in revised Non-Technical Summary (**Tab 6**).

(k) provide:

(i) details, and an assessment, of the impacts of any existing or proposed emissions on the environment as a whole, including on an environmental medium other than that or those into which the emissions are, or are to be, made, and

Included in Waste Licence Application/EIS, December 2010 (various sections); submitted to the Agency 17/12/2010.

(ii) details of the proposed measures to prevent or eliminate, or where that is not practicable, to limit, reduce or abate emissions,

Included in Waste Licence Application/EIS, December 2010 (various sections); submitted to the Agency 17/12/2010.

(l) describe in outline the main alternatives to the proposed technology, techniques and measures which were studied by the applicant,

Included in the EIS, December 2010 (Chapter 3); submitted to the Agency 17/12/2010.

(m) describe the condition of the site of the installation,

Included in the EIS, December 2010 (various sections); submitted to the Agency 17/12/2010.

(n) provide, when requested by the Agency, in the case of an activity that involves the use, production or release of relevant hazardous substances (as defined in section 3 of the Act of 1992) and having regard to the possibility of soil and groundwater contamination at the site of the installation, a baseline report in accordance with section 86B of the Act of 1992,

Please find Baseline Report enclosed in **Tab 5**.

(o) specify the measures to be taken to comply with an environmental quality standard where such a standard requires stricter conditions to be attached to a licence than would otherwise be determined by reference to best available techniques,

Not applicable.

(p) describe the measures to be taken for minimising pollution over long distances or in the territory of other states,

Not applicable.

(q) describe the measures to be taken under abnormal operating conditions, including start-up, shutdown, leaks, malfunctions, breakdowns and momentary stoppages,

Malfunction, breakdowns and other incidents will be addressed by the facility's Incident Response Procedure, which will include notification to the EPA.

Measures will be put in place for standby/duty capacity for critical elements of plant and equipment.

Start-up, momentary stoppages, etc. will be largely not applicable. Such issues will be considered as part of the detailed design stage of the Solidification Plant.

(r) describe the measures to be taken on and following the permanent cessation of the activity or part of the activity to avoid any risk of environmental pollution and to return the site of the activity to a satisfactory state or the state established in the baseline report if such is required under section 86B of the Act of 1992,

Included in Waste Licence Application/EIS, December 2010; submitted to the Agency 17/12/2010. Further details (CRAMP report) submitted to the Agency 21/05/2013.

Please find Baseline Report enclosed (**Tab 5**).

(s) describe the arrangements for the prevention of waste in accordance with Part III of the Act of 1996, and where waste is generated by the installation, how it will be in order of priority in accordance with section 21A of the Act of 1996, prepared for re-use, recycling, recovery or where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment,

Included in Waste Licence Application/EIS, December 2010; submitted to the Agency 17/12/2010. Further details submitted to the Agency 08/08/2011.

(t) specify, by reference to the relevant European Waste Catalogue codes as prescribed by Commission Decision 2000/532/EC of 3 May 2000[2] , the quantity and nature of the waste or wastes produced or to be produced by the activity, or the quantity and nature of the waste or waste accepted or to be accepted at the installation,

Included in Waste Licence Application/EIS, December 2010; submitted to the Agency 17/12/2010. Further details submitted to the Agency 08/08/2011.

(u) state whether the activity consists of, comprises, or is for the purposes of an establishment to which the European Communities (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2006 (S.I. No. 74 of 2006) apply,

Included in Waste Licence Application/EIS, December 2010; submitted to the Agency 17/12/2010. Further details (correspondence to/from the HSA post the application to the EPA for a Waste Licence) submitted to the Agency 07/06/2012.

(v) describe, in the case of an activity which gives rise, or could give rise, to an emission containing a hazardous substance which is discharged to an aquifer and is specified in the Annex to Council Directive 80/68/EEC of 17 December 1979[3] on the protection of groundwater against pollution caused by certain dangerous substances, the arrangements necessary to comply with the said Council Directive,

Included in the EIS, December 2010; submitted to the Agency 17/12/2010. Further details (hydrogeological information) submitted to the Agency 07/06/2012, 18/02/2012 and 17/10/2013.

(w) include a non-technical summary of information provided in relation to the matters specified in subparagraphs (c) to (x) of this paragraph,

Please find revised non-technical summary attached in **Tab 6**.

(x) include any other information required under Article 11 of the Industrial Emissions Directive.

Article 11 of the IED states:

"General principles governing the basic obligations of the operator

Member States shall take the necessary measures to provide that installations are operated in accordance with the following principles:

(a) all the appropriate preventive measures are taken against pollution;
(b) the best available techniques are applied;
(c) no significant pollution is caused;
(d) the generation of waste is prevented in accordance with Directive 2008/98/EC;
(e) where waste is generated, it is, in order of priority and in accordance with Directive 2008/98/EC, prepared for re-use, recycled, recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment;
(f) energy is used efficiently;
(g) the necessary measures are taken to prevent accidents and limit their consequences;
(h) the necessary measures are taken upon definitive cessation of activities to avoid any risk of pollution and return the site of operation to the satisfactory state defined in accordance with Article 22."

The above requirements have been considered in the Waste Licence Application/EIS, December 2010; submitted to the Agency 17/12/2010, and related information subsequently submitted to the Agency.

(3) An application for a review of a licence shall:

(a) state the grounds on which it is made,

(b) specify the reference number given to the relevant licence in the register,

(c) include results of emission monitoring and other data, that enables a comparison of the operation of the installation with the best available techniques described in the applicable BAT conclusions and with the emission levels associated with the best available techniques in accordance with section 86A(9) of the Act of 1992, and

(d) include the information specified in paragraph (2) and such plans, documents and particulars as are specified under paragraph (4) to the extent and in such a manner as may be specified by the Agency.

The MEHL application (December 2010) was not an application for a review of a licence; therefore not applicable.

(4) An application for a licence shall be accompanied by—

(a) a copy of the relevant page of the newspaper in which the notice in accordance with Regulation 5 has been published,

Included in Waste Licence Application, December 2010; submitted to the Agency 17/12/2010.

The application was re-advertised as per the requirements of Regulation 5. Please find attached in **Tab 7**.

(b) a copy of the text of the site notice erected or fixed on the land or structure in accordance with Regulation 6,

Included in Waste Licence Application, December 2010; submitted to the Agency 17/12/2010.

The application was re-advertised as per the requirements of Regulation 6. Please find attached in **Tab 8**.

(c) a copy of the notice given to the planning authority under section 87(1)(a) of the Act of 1992,

Included in Waste Licence Application, December 2010; submitted to the Agency 17/12/2010. Further details submitted to the Agency 30/06/2011.

The application again notified to An Bord Pleanála and Fingal County Council as per requirements. Please find attached in **Tab 9**.

(d) a copy of such plans, including a site plan and location map, and such other particulars, reports and supporting documentation as are necessary to identify and describe—

(i) the activity,
(ii) the position of the site notice in accordance with Regulation 6,
(iii) the point or points from which emissions are made or are to be made,
(iv) monitoring and sampling points, and
(e) a fee specified in accordance with section 99A of the Act of 1992.

Included in Waste Licence Application, December 2010; submitted to the Agency 17/12/2010. Updated monitoring locations drawing submitted to Agency with Article 16 information, 17/10/13; included herewith in revised Non-Technical Summary (**Tab 6**). Drawing showing positions of site notice included herewith in revised Non-Technical Summary (**Tab 6**).

(5) A signed original, 1 hardcopy and 2 electronic copies of the application as required under paragraphs (1) and (2) or under paragraphs (1) and (3), where the application concerns a review of a licence, and the accompanying documents and particulars as required under paragraph (4) shall be submitted to the headquarters of the Agency.

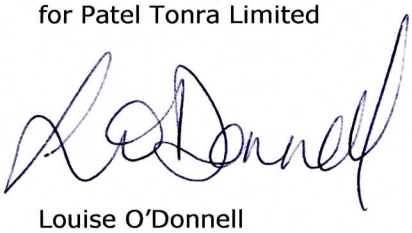
Submitted to the Agency 17/12/2010, in compliance with the Agency's requirements.

We trust this addresses full compliance with the requirements of EPA (Industrial Emission) (Licensing) Regulations 2013.

The Applicant looks forward to the Agency's proposed decision at the soonest opportunity, and within the eight-week period within which the Agency is to decide the proposed determination, as indicated by your correspondence of the 18th February 2014.

Please do not hesitate to contact us, should you require any further information or clarification.

Yours Sincerely
for Patel Tonra Limited



Louise O'Donnell
Environmental Consultant
On behalf of MEHL

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

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Ms Louise O'Donnell
Patel Tonra Ltd
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Balbriggan
Co. Dublin

18 February 2014 W0129-03

Re: Notice for the purposes of Section 76A(3) of the Waste Management Act, as amended

Dear Ms O'Donnell,

With reference to your application for a waste licence [reg. no. W0129-03, received 17/12/2010] the Agency would draw your attention to a change in the applicable rules. Pursuant to the European Union (Industrial Emissions) Regulations 2013, Part IV of the Environmental Protection Agency Act 1992 has been amended and the Agency is now required to determine the application under the new Part IV.

A valid application for a licence must now contain the information prescribed in Regulation 9 of the EPA (Industrial Emissions)(Licensing) Regulations, 2013. You are requested to furnish such information as is necessary to comply with these requirements.

Alternatively, if you so wish, you may withdraw your application and resubmit it as a new application under the new Part IV. If you opt to furnish the Agency with the required information rather than take the withdrawal option, you should make immediate arrangements to have the required documents (1 signed original and 1 copy in hardcopy format, and 2 copies of all files in electronic searchable PDF format on CD-ROM) submitted to the Agency without delay. Your response to this request should be directed to Ms Noeleen Keavey, Administration Officer, Office of Climate, Licensing & Resource Use, Environmental Protection Agency, P.O. Box 3000, Johnstown Castle, Co. Wexford. In addition to the above please also provide an updated non-technical summary to reflect the information provided in your reply.

It should be noted that the eight-week period within which the Agency is to decide the proposed determination will commence on the day on which this notice has been complied with.

This notice is issued for the purposes of Section 76A(3) of the Waste Management Act, 1996, as amended.

If you need any further assistance, or have any queries in relation to these matters, please contact the Environmental Licensing Programme at licensing@epa.ie.

Yours sincerely

Brian Meaney
Environmental Licensing Programme.

Register of Application Documentation Submitted to the Agency under W0129-03

The following summary list of information has been submitted to the Agency, and is available for inspection, in full, at epa.ie (IE Licence Ref. W0129-03):

1. Waste Licence Application and EIS, 17/12/10
2. Unsolicited information re. notices to Planning Authorities, 30/06/11
3. Unsolicited information re. revised drawings, 18/07/11
4. Article 14 information, 08/08/11
5. Correspondence to EPA re. status of application, 10/12/11 and 14/3/12
6. Article 16 information, 19/4/12
7. Unsolicited information re. An Bord Pleanála reports, 28/05/12
8. Article 14 information, 28/05/12
9. Article 16 information, 07/06/12
10. Article 16 information, 20/08/12
11. Article 14 information, 20/08/12
12. Report on Assessment of Hydrogeological Isolation (Bog of the Ring and the MEHL Site), 18/02/13
13. Article 16 information, 15/05/13
14. Article 16 information re. CRAMP, 21/05/13
15. Article 16 information, 21/05/13
16. Correspondence re. contact details, 02/07/13
17. IED Registration Form, 14/08/13
18. Unsolicited information re. management structure, 16/10/13
19. Article 16 information, 17/10/13
20. Correspondence re. time extension, 11/12/13

COMPLIANCE WITH BREF

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	**5.1.1. Tanks**	Tanks to be constructed/installed as part of the proposed development at MEHL are as follows: - leachate management collection and storage infrastructure including leachate holding tank for hazardous waste cells - leachate management collection and storage infrastructure including leachate holding tank for non-hazardous waste cells - 2 x 30 m^3 bunded acid tanks will be provided - 4 x Storage Silos will be provided to store FGT residues awaiting solidification (4 x 78 m3), - 1 x Cement Silo will be provided (1 x 78 m3) - precast septic tank - cold water storage tanks in both buildings - rainwater harvesting tank - A 7,500 litre diesel tank for site machinery

COMPLIANCE WITH BREF

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	**5.1.1.1. General principles to prevent and reduce emissions** **<u>Tank design</u>** BAT for a proper design is to take into account at least the following: • the physico-chemical properties of the substance being stored • how the storage is operated, what level of instrumentation is needed, how many operators are required, and what their workload will be • how the operators are informed of deviations from normal process conditions (alarms) • how the storage is protected against deviations from normal process conditions (safety instructions, interlock systems, pressure relief devices, leak detection and containment, etc.) • what equipment has to be installed, largely taking account of past experiences of the product (construction materials, valve quality, etc.) • which maintenance and inspection plan needs to be implemented and how to ease the maintenance and inspection work (access, layout, etc.) • how to deal with emergency situations (distances to other tanks, facilities and to the boundary, fire protection, access for emergency services such as the fire brigade, etc.). See Annex 8.19 for a typical checklist.	Only tanks meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person.
Emissions from Storage – BREF 07.2006	**<u>Inspection and maintenance</u>** BAT is to apply a tool to determine proactive maintenance plans and to develop risk-based inspection plans such as the risk and reliability based maintenance approach; see Section 4.1.2.2.1. Inspection work can be divided into routine inspections, in-service external inspections and out of-service internal inspections and are described in detail in Section 4.1.2.2.2.	- Tanks will be subject to routine inspection and maintenance as part of scheduled Site Inspections.
Emissions from Storage – BREF 07.2006	**<u>Location and layout</u>** For building new tanks it is important to select the location and the layout with care, e.g. water protection areas and water catchment areas should be avoided whenever possible. See Section 4.1.2.3. BAT is to locate a tank operating at, or close to, atmospheric pressure aboveground. However, for storing flammable liquids on a site with restricted space, underground tanks can also be considered. For liquefied gases, underground, mounded storage or spheres can be considered, depending on the storage volume.	- The location/layout of tanks has been considered as part of design works for planning/licensing.

COMPLIANCE WITH BREF

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	**Tank colour** BAT is to apply either a tank colour with a reflectivity of thermal or light radiation of at least 70 %, or a solar shield on aboveground tanks which contain volatile substances, see Section 4.1.3.6 and 4.1.3.7 respectively.	Only tanks meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person.
Emissions from Storage – BREF 07.2006	**Emissions minimisation principle in tank storage** BAT is to abate emissions from tank storage, transfer and handling that have a significant negative environmental effect, as described in Section 4.1.3.1. This is applicable to large storage facilities allowing a certain time frame for implementation.	Emissions from tank storage are anticipated to be minimal.
Emissions from Storage – BREF 07.2006	**Monitoring of VOC** On sites where significant VOC emissions are to be expected, BAT includes calculating the VOC emissions regularly. The calculation model may occasionally need to be validated by applying a measurement method. See Section 4.1.2.2.3. There is a split view from three Member States, because in their view, on sites where significant VOC emissions are to be expected (e.g. refineries, petrochemical plants and oil terminals), BAT is to calculate the VOC emissions regularly with validated calculation methods, and because of uncertainties in the calculation methods, emissions from the plants should be monitored occasionally in order to quantify the emissions and to give basic data for refining calculation methods. This can be carried out by using DIAL techniques. The necessity and frequency of emission monitoring needs to be decided on a case-by-case basis.	No significant VOC emissions expected in relation to proposed development.
Emissions from Storage – BREF 07.2006	**Dedicated systems** BAT is to apply dedicated systems; see Section 4.1.4.4. Dedicated systems are generally not applicable on sites where tanks are used for short to medium-term storage of different products.	Not applicable.

COMPLIANCE WITH BREF

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	**5.1.1.3. Preventing incidents and (major) accidents** **<u>Safety and risk management</u>** The Seveso II Directive (Council Directive 96/82/EC of 9 December 1996 on the control of major accident hazards involving dangerous substances) requires companies to take all measures necessary to prevent and limit the consequences of major accidents. They must, in any case, have a major accident prevention policy (MAPP) and a safety management system to implement the MAPP. Companies holding large quantities of dangerous substances, the so-called upper tiered establishments, must also draw up a safety report and an on-site emergency plan and maintain an up-to-date list of substances. However, plants that do not fall under the scope of the Seveso II Directive can also cause emissions from incidents and accidents. Applying a similar, maybe less detailed, safety management system is the first step in preventing and limiting these. BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	The proposed development is identified as a lower-tier Seveso activity. A notification has been made to the Health & Safety Authority under the European Communities (Control of Major Accidents involving Dangerous Substances) Regulations 2006. HSA and related accident prevention requirements will be implemented. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.
	<u>Operational procedures and training</u> BAT is to implement and follow adequate organisational measures and to enable training and instruction of employees for safe and responsible operation of the installation as described in Section 4.1.6.1.1.	Appropriate operational and training procedures will be put in place.
	<u>Leakage due to corrosion and/or erosion</u> Corrosion is one of the main causes of equipment failure and can occur both internally and externally on any metal surface, see Section 4.1.6.1.4. BAT is to prevent corrosion by: • selecting construction material that is resistant to the product stored • applying proper construction methods • preventing rainwater or groundwater entering the tank and if necessary, removing water that has accumulated in the tank • applying rainwater management to bund drainage • applying preventive maintenance, and • where applicable, adding corrosion inhibitors, or applying cathodic protection on the inside of the tank. Additionally for an underground tank, BAT is to apply to the outside of the tank: • a corrosion-resistant coating • plating, and/or • a cathodic protection system.	Only tanks meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person. Tanks will be subject to routine inspection and maintenance as part of scheduled Site Inspections. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.

COMPLIANCE WITH BREF

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	Stress corrosion cracking (SCC) is a specific problem for spheres, semi-refrigerated tanks and some fully refrigerated tanks containing ammonia. BAT is to prevent SCC by: • stress relieving by post-weld heat treatment, see Section 4.1.6.1.4, and • applying a risk based inspection as described in Section 4.1.2.2.1.	Only tanks meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person. Tanks will be subject to routine inspection and maintenance as part of scheduled Site Inspections.
	Operational procedures and instrumentation to prevent overfill BAT is to implement and maintain operational procedures – e.g. by means of a management system – as described in Section 4.1.6.1.5, to ensure that: • high level or high pressure instrumentation with alarm settings and/or auto closing of valves is installed • proper operating instructions are applied to prevent overfill during a tank filling operation, and • sufficient ullage is available to receive a batch filling. A standalone alarm requires manual intervention and appropriate procedures, and automatic valves need to be integrated into the upstream process design to ensure no consequential effects of closure. The type of alarm to be applied has to be decided for every single tank. See Section 4.1.6.1.6.	The solidification process will be undertaken within a fully enclosed building. The unloading process will be undertaken after closing the roller shutter doors, fixing an exhaust extractor to the bulk tanker and connecting to the manifold to pump material into the silos. Operational procedures/ instrumentation will be installed/employed to prevent overfill relating to on-site tanks/silos. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.
	Instrumentation and automation to detect leakage The four different basic techniques that can be used to detect leaks are: • release prevention barrier system • inventory checks • acoustic emission method • soil vapour monitoring. BAT is to apply leak detection on storage tanks containing liquids that can potentially cause soil pollution. The applicability of the different techniques depends on the tank type and is discussed in detail in Section 4.1.6.1.7.	Tanks will be subject to routine inspection and maintenance as part of scheduled Site Inspections. Leak detection will be conducted in line with manufacturer's requirements/specifications.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	<u>Risk-based approach to emissions to soil below tanks</u> The risk-based approach to emissions to soil from an aboveground flat-bottom and vertical, storage tank containing liquids with a potency to pollute soil, is that soil protection measures are applied at such a level that there is a 'negligible risk' for soil pollution because of leakage from the tank bottom or from the seal where the bottom and the wall are connected. See Section 4.1.6.1.8 where the approach and the risk levels are explained. BAT is to achieve a 'negligible risk level' of soil pollution from bottom and bottom-wall connections of aboveground storage tanks. However, on a case-by-case basis, situations might be identified where an 'acceptable risk level' is sufficient.	A 7,500 litre diesel tank for site machinery will be stored in a bunded and roofed storage building. It is proposed to construct this building adjacent to the solidification yard. The reinforced concrete bund walls will be constructed to watertight standard BS8007 and sized to retain 110% of the total diesel volume. A steel and single skin cladding will be provided to roof the building and prevent water ingress into the bund. Acid tanks will be bunded. Storage silos will be designed to international standards and will be

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	**Soil protection around tanks – containment** BAT for aboveground tanks containing flammable liquids or liquids that pose a risk for significant soil pollution or a significant pollution of adjacent watercourses is to provide secondary containment, such as: • tank bunds around single wall tanks; see Section 4.1.6.1.11 • double wall tanks; see Section 4.1.6.1.13 • cup-tanks; see Section 4.1.6.1.14 • double wall tanks with monitored bottom discharge; see Section 4.1.6.1.15. For building new single walled tanks containing liquids that pose a risk for significant soil pollution or a significant pollution of adjacent watercourses, BAT is to apply a full, impervious, barrier in the bund, see Section 4.1.6.1.10. For existing tanks within a bund, BAT is to apply a risk-based approach, considering the significance of risk from product spillage to the soil, to determine if and which barrier is best applicable. This risk-based approach can also be applied to determine if a partial impervious barrier in a tank bund is sufficient or if the whole bund needs to be equipped with an impervious barrier. See Section 4.1.6.1.11. Impervious barriers include: • a flexible membrane, such as HDPE • a clay mat • an asphalt surface • a concrete surface. For chlorinated hydrocarbon solvents (CHC) in single walled tanks, BAT is to apply CHCproof laminates to concrete barriers (and containments), based on phenolic or furan resins. One form of epoxy resin is also CHC-proof. See Section 4.1.6.1.12. BAT for underground and mounded tanks containing products that can potentially cause soil pollution is to: • apply a double walled tank with leak detection, see Section 4.1.6.1.16, or • to apply a single walled tank with secondary containment and leak detection, see Section 4.1.6.1.17.	provided with a vent filter to prevent the escape of dust, although the dust does not present a toxic hazard to humans. Procedures will be established and training provided for staff in the discharge of road tankers and the operation of all associated equipment. The road tanker parking area, the ash storage silos and the solidification plant will be located within a kerbed area, providing containment in an emergency scenario. The area will be sloped to a collection sump, which will be provided with a valve. Only tanks meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.
Emissions from Storage – BREF 07.2006	**Fire protection** The necessity for implementing fire protection measures has to be decided on a case-by-case basis. Fire protection measures can be provided by applying, e.g. (see Section 4.1.6.2.2): • fire resistant claddings or coatings • firewalls (only for smaller tanks), and/or • water cooling systems.	A fire hydrant will be installed on the new watermain as per proposed site layout drawings. The site will be subject to fire requirements of the local authority and will be further considered as part of the detailed design stage.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	Fire-fighting equipment The necessity for implementing fire-fighting equipment and the decision on which equipment to apply has to be taken on a case-by-case basis in agreement with the local fire brigade. Some examples are given in Section 4.1.6.2.3.	
	Containment of contaminated extinguishant The capacity for containing contaminated extinguishant depends on the local circumstances, such as which substances are stored and whether the storage is close to watercourses and/or situated in a water catchment area. The applied containment therefore has to be decided on a case-by-case basis, see Section 4.1.6.2.4. For toxic, carcinogenic or other hazardous substances, BAT is to apply full containment.	Though the risk of fire at the site will be low, the management of contaminated water arising from a fire has been included in the surface water management system. Should a fire occur within a cell or at the waste quarantine area, any water used to fight the fire will be contained in the cell and the firewater will be managed within the leachate management system. In the event that a fire occurs at the solidification plant, contaminated water generated in fighting the fire will drain to the leachate pumping sump. This sump and the kerbing around the hard paved area around the solidification plant will have sufficient capacity to store contaminated water for the duration of any likely fire. In the event of a major fire, any excess water arising would be temporarily pumped to leachate holding tanks. Any fires arising at the administration building will be dealt with in the same manner as a typical office development
Emissions from Storage – BREF 07.2006	**5.2. Transfer and handling of liquids and liquefied gases** **5.2.1. General principles to prevent and reduce emissions** **Inspection and maintenance** BAT is to apply a tool to determine proactive maintenance plans and to develop risk-based inspection plans such as, the risk and reliability based maintenance approach; see Section 4.1.2.2.1.	Tanks will be subject to routine inspection and maintenance as part of scheduled Site Inspections. Bunds will be subject to bund testing on a routine and scheduled basis. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	Leak detection and repair programme For large storage facilities, according to the properties of the products stored, BAT is to apply a leak detection and repair programme. Focus needs to be on those situations most likely to cause emissions (such as gas/light liquid, under high pressure and/or temperature duties). See Section 4.2.1.3.	Not applicable.
	Emissions minimisation principle in tank storage BAT is to abate emissions from tank storage, transfer and handling that have a significant negative environmental effect, as described in Section 4.1.3.1. This is applicable to large storage facilities, allowing a certain time frame for implementation.	Emissions from tank storage are anticipated to be minimal.
	Safety and risk management BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	The facility will be subject to Health & Safety risk assessment and a resulting safety management system.
	Operational procedures and training BAT is to implement and follow adequate organisational measures and to enable the training and instruction of employees for safe and responsible operation of the installation as described in Section 4.1.6.1.1.	Appropriate operational and training procedures will be put in place.
Emissions from Storage – BREF 07.2006	**5.2.2. Considerations on transfer and handling techniques** **5.2.2.1. Piping** BAT is to apply aboveground closed piping in new situations, see Section 4.2.4.1. For existing underground piping it is BAT to apply a risk and reliability based maintenance approach as described in Section 4.1.2.2.1. Bolted flanges and gasket-sealed joints are an important source of fugitive emissions. BAT is to minimise the number of flanges by replacing them with welded connections, within the limitation of operational requirements for equipment maintenance or transfer system flexibility, see Section 4.2.2.1….. To prevent the piping from external corrosion, BAT is to apply a one, two, or three layer coating system depending on the site-specific conditions (e.g. close to sea). Coating is normally not applied to plastic or stainless steel pipelines. See Section 4.2.3.2.	Pipework has been considered by as part of engineering design proposals and will be further detailed as part of the detailed design stage, with due regard for requirements. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	5.2.2.2. Vapour treatment BAT is to apply vapour balancing or treatment on significant emissions from the loading and unloading of volatile substances to (or from) trucks, barges and ships. The significance of the emission depends on the substance and the volume that is emitted, and has to be decided on a case-by-case basis. For more detail see Section 4.2.8. For example, according to Dutch regulations, the emission of methanol is significant when over 500 kg/yr is emitted.	Not applicable.
	5.2.2.3. Valves BAT for valves include: • correct selection of the packing material and construction for the process application • with monitoring, focus on those valves most at risk (such as rising stem control valves in continual operation) • applying rotating control valves or variable speed pumps instead of rising stem control valves • where toxic, carcinogenic or other hazardous substances are involved, fit diaphragm, bellows, or double walled valves • route relief valves back into the transfer or storage system or to a vapour treatment system. See Sections 3.2.2.6 and 4.2.9.	Only valves meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	5.2.2.4. Pumps and compressors Installation and maintenance of pumps and compressors The design, installation and operation of the pump or compressor heavily influence the life potential and reliability of the sealing system. The following are some of the main factors which constitute BAT: • proper fixing of the pump or compressor unit to its base-plate or frame • having connecting pipe forces within producers' recommendations • proper design of suction pipework to minimise hydraulic imbalance • alignment of shaft and casing within producers' recommendations • alignment of driver/pump or compressor coupling within producers' recommendations when fitted • correct level of balance of rotating parts • effective priming of pumps and compressors prior to start-up • operation of the pump and compressor within producers' recommended performance range (The optimum performance is achieved at its best efficiency point.) • the level of net positive suction head available should always be in excess of the pump or compressor • regular monitoring and maintenance of both rotating equipment and seal systems, combined with a repair or replacement programme. Sealing system in pumps BAT is to use the correct selection of pump and seal types for the process application, preferably pumps that are technologically designed to be tight such as canned motor pumps, magnetically coupled pumps, pumps with multiple mechanical seals and a quench or buffer system, pumps with multiple mechanical seals and seals dry to the atmosphere, diaphragm pumps or bellow pumps. For more details see Sections 3.2.2.2, 3.2.4.1 and 4.2.9. Sealing systems in compressors BAT for compressors transferring non-toxic gases is to apply gas lubricated mechanical seals. BAT for compressors, transferring toxic gases is to apply double seals with a liquid or gas barrier and to purge the process side of the containment seal with an inert buffer gas. In very high pressure services, BAT is to apply a triple tandem seal system. For more detail see Sections 3.2.3 and 4.2.9.13.	Only pumps/compressors meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	5.2.2.5. Sampling connections BAT, for sample points for volatile products, is to apply a ram type sampling valve or a needle valve and a block valve. Where sampling lines require purging, BAT is to apply closed-loop sampling lines. See Section 4.2.9.14.	Not applicable.
Emissions from Storage – BREF 07.2006	**5.3. Storage of solids** **5.3.2. Enclosed storage** BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers. Where silos are not applicable, storage in sheds can be an alternative. This is, e.g. the case if apart from storage, the mixing of batches is needed. BAT for silos is to apply a proper design to provide stability and prevent the silo from collapsing. See Sections 4.3.4.1 and 4.3.4.5. BAT for sheds is to apply proper designed ventilation and filtering systems and to keep the doors closed. See Section 4.3.4.2. BAT is to apply dust abatement and a BAT associated emission level of 1 – 10 mg/m3, depending on the nature/type of substance stored. The type of abatement technique has to be decided on a case-by-case basis. See Section 4.3.7. For a silo containing organic solids, BAT is to apply an explosion resistant silo (see Section 4.3.8.3), equipped with a relief valve that closes rapidly after the explosion to prevent oxygen entering the silo, as described in Section 4.3.8.4.	Enclosed storage has been proposed as part of the proposed development. Only silos meeting the required specifications and installed in accordance with certification requirements (as appropriate) will be procured. This will be addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person. All potentially-polluting substances on site will be stored and transported in accordance with EPA (2004, or as may be amended) *Guidance Note on Storage and Transfer of Materials for Scheduled Activities*.
Emissions from Storage – BREF 07.2006	**5.3.4. Preventing incidents and (major) accidents** **Safety and risk management** The Seveso II Directive (Council Directive 96/82/EC of 9 December 1996 on the control of major accident hazards involving dangerous substances) requires companies to take all measures necessary to prevent and limit the consequences of major accidents. They must in any case have a major accident prevention policy (MAPP) and a safety management system to implement the MAPP. Companies holding large quantities of dangerous substances, so-called upper tiered establishments, must also draw up a safety report and an on-site emergency plan and maintain an up-to-date list of substances. However, plants that do not fall under the scope of the Seveso II Directive can also cause emissions from incidents and accidents. Applying a similar, maybe less detailed, safety management system is the first step in preventing and limiting these. BAT in preventing incidents and accidents is applying a safety management system as described in Section 4.1.7.1.	The proposed development is identified as a lower-tier Seveso activity. A notification has been made to the Health & Safety Authority under the European Communities (Control of Major Accidents involving Dangerous Substances) Regulations 2006. HSA and related accident prevention requirements will be implemented.

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BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
Emissions from Storage – BREF 07.2006	**5.4. Transfer and handling of solids** **5.4.1. General approaches to minimise dust from transfer and handling** BAT is to prevent dust dispersion due to loading and unloading activities in the open air, by scheduling the transfer as much as possible when the wind speed is low. However, and taking into account the local situation, this type of measure cannot be generalised to the whole EU and to any situation irrespective of the possible high costs. See Section 4.4.3.1. Discontinuous transport (e.g. shovel or truck) generally generates more dust emissions than continuous transport such as conveyors. BAT is to make transport distances as short as possible and to apply, wherever possible, continuous transport modes. For existing plants, this might be a very expensive measure. See Section 4.4.3.5.1. When applying a mechanical shovel, BAT is to reduce the drop height and to choose the best position during discharging into a truck; see Section 4.4.3.4. While driving, vehicles might swirl up dust from solids spread on the ground. BAT then is to adjust the speed of vehicles on-site to avoid or minimise dust being swirled up; see Section 4.4.3.5.2. BAT for roads that are used by trucks and cars only, is applying hard surfaces to the roads of, for example, concrete or asphalt, because these can be cleaned easily to avoid dust being swirled up by vehicles, see Section 4.4.3.5.3. However, applying hard surfaces to the roads is not justified when the roads are used just for big shovel vehicles or when a road is temporary. BAT is to clean roads that are fitted with hard surfaces according to Section 4.4.6.12. Cleaning of vehicle tyres is BAT. The frequency of cleaning and type of cleaning facility applied (see Section 4.4.6.13) has to be decided on a case-by-case basis. Where it neither compromises product quality, plant safety, nor water resources, BAT for loading/unloading drift sensitive, wettable products is to moisten the product as described in Sections 4.4.6.8, 4.4.6.9 and 4.3.6.1. Risk of freezing of the product, risk of slippery situations because of ice forming or wet product on the road and shortage of water are examples when this BAT might not be applicable. For loading/unloading activities, BAT is to minimise the speed of descent and the free fall height of the product; see Sections 4.4.5.6 and 4.4.5.7 respectively. Minimising the speed of descent can be achieved by the following techniques that are BAT: • installing baffles inside fill pipes • applying a loading head at the end of the pipe or tube to regulate the output speed	The Solidification Plant will be fully enclosed with roller shutter doors and mechanical ventilation and filters preventing dust emissions. An underground conveyor system will be installed to transport IBC bags from the Solidification Plant to the adjacent storage building. The Flue Gas Treatment (FGT) residue unloading process will be undertaken after closing the roller shutter doors, fixing an exhaust extractor to the bulk tanker and connecting to the manifold to pump material into the silos. Materials stored in the silos will be pumped directly to the mixing unit with cement, water or leachate and acid will be added in a controlled manner by an electronic process control system. Requirements will be further considered as part of the detailed design stage.

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	• applying a cascade (e.g. cascade tube or hopper) • applying a minimum slope angle with, e.g. chutes. To minimise the free fall height of the product, the outlet of the discharger should reach down onto the bottom of the cargo space or onto the material already piled up. Loading techniques that can achieve this, and that are BAT, are: • height adjustable fill pipes • height adjustable fill tubes, and • height adjustable cascade tubes. These techniques are BAT, except when loading/unloading non drift sensitive products, for which the free fall height is not that critical. Optimised discharged hoppers are available and described in Section 4.4.6.7	
Emissions from Storage – BREF 07.2006	**5.4.2. Considerations on transfer techniques** **<u>Conveyors and transfer chutes</u>** For all types of substances, BAT is to design conveyor to conveyor transfer chutes in such a way that spillage is reduced to a minimum. A modelling process is available to generate detail designs for new and existing transfer points. For more details see Section 4.4.5.5. For non or very slightly drift sensitive products (S5) and moderately drift sensitive, wettable products (S4), BAT is to apply an open belt conveyor and additionally, depending on the local circumstances, one or a proper combination of the following techniques: • lateral wind protection, see Section 4.4.6.1 • spraying water and jet spraying at the transfer points, see Sections 4.4.6.8 and 4.4.6.9, and/or • belt cleaning, see Section 4.4.6.10. For highly drift sensitive products (S1 and S2) and moderately drift sensitive, not wettable products (S3) BAT for new situations, is to: apply closed conveyors, or types where the belt itself or a second belt locks the material (see Section 4.4.5.2), such as: • pneumatic conveyors • trough chain conveyors • screw conveyors • tube belt conveyor • loop belt conveyor • double belt conveyor or to apply enclosed conveyor belts without support pulleys (see Section 4.4.5.3), such as: • aerobelt conveyor • low friction conveyor • conveyor with diabolos. The type of conveyor depends on the substance to be transported and on the location and has to be decided on a case-by-case basis. For existing conventional conveyors,	The Solidification Plant will be fully enclosed with roller shutter doors and mechanical ventilation and filters preventing dust emissions. An underground conveyor system will be installed to transport IBC bags from the Solidification Plant to the adjacent storage building. The Flue Gas Treatment (FGT) residue unloading process will be undertaken after closing the roller shutter doors, fixing an exhaust extractor to the bulk tanker and connecting to the manifold to pump material into the silos. Materials stored in the silos will be pumped directly to the mixing unit with cement, water or leachate and acid will be added in a controlled manner by an electronic process control system. Requirements will be further considered as part of the detailed design stage.

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	transporting highly drift sensitive products (S1 and S2) and moderately drift sensitive, not wettable products (S3), BAT is to apply housing; see Section 4.4.6.2. When applying an extraction system, BAT is to filter the outgoing air stream; see Section 4.4.6.4. To reduce energy consumption for conveyor belts (see Section 4.4.5.2), BAT is to apply: • a good conveyor design, including idlers and idler spacing • an accurate installation tolerance, and • a belt with low rolling resistance. See Annex 8.4 for the disperseveness classes (S1 – S4) of solid bulk materials.	
Energy Efficiency – BREF 02.2009	1. BAT is to implement and adhere to an energy efficiency management system (ENEMS)… 2. BAT is to continuously minimise the environmental impact of an installation by planning actions and investments on an integrated basis and for the short, medium and long term, considering the cost-benefits and cross-media effects. 3. BAT is to identify the aspects of an installation that influence energy efficiency by carrying out an audit. It is important that an audit is coherent with a systems approach (see BAT 7). 4. When carrying out an audit, BAT is to ensure that the audit identifies the following aspects (see Section 2.11)… 5. BAT is to use appropriate tools or methodologies to assist with identifying and quantifying energy optimisation 6. BAT is to identify opportunities to optimise energy recovery within the installation, between systems within the installation (see BAT 7) and/or with a third party (or parties), such as those described in Sections 3.2, 3.3 and 3.4. 7. BAT is to optimise energy efficiency by taking a systems approach to energy management in the installation… 8. BAT is to establish energy efficiency indicators 9. BAT is to carry out systematic and regular comparisons with sector, national or regional benchmarks, where validated data are available. 10. BAT is to optimise energy efficiency when planning a new installation, unit or system or a significant upgrade (see Section 2.3) … 11. BAT is to seek to optimise the use of energy between more than one process or system (see Section 2.4), within the installation or with a third party. 12. BAT is to maintain the impetus of the energy efficiency programme by using a variety of	In terms of the proposed integrated waste management facility, a new electricity connection will be brought to the new site office/weighbridge, solidification plant and storage building. It is proposed to construct an ESB substation at the facility control area. The solidification plant will use electrical power for small motors to operate the dosing and mixing units. MEHL will specify energy-efficient design, construction, plant and equipment at detailed design phase. Records of energy use will be monitored as part of an Energy Management System, which will identify opportunities for energy efficiency measure. Records will be maintained on site and reported to the EPA in the AER in accordance with licence conditions.

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	techniques… 13. BAT is to maintain expertise in energy efficiency and energy-using systems by using techniques… 14. BAT is to ensure that the effective control of processes is implemented by techniques… 15. BAT is to carry out maintenance at installations to optimise energy efficiency by applying all of the following… 16. BAT is to establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of operations and activities that can have a significant impact on energy efficiency. Some suitable techniques are given in Section 2.10. 21. BAT is to increase the power factor according to the requirements of the local electricity distributor by using techniques such as those in Table 4.3, according to applicability (see Section 3.5.1). 22. BAT is to check the power supply for harmonics and apply filters if required (see Section 3.5.2). 23. BAT is to optimise the power supply efficiency by using techniques such as those in Table 4.4, according to applicability… 24. BAT is to optimise electric motors in the following order (see Section 3.6): 25. BAT is to optimise compressed air systems (CAS) using the techniques such as those in Table 4.6, according to applicability… 26. BAT is to optimise pumping systems by using the techniques in Table 4.7, according to applicability (see Section 3.8)… 27. BAT is to optimise heating, ventilation and air conditioning systems by using techniques… 28. BAT is to optimise artificial lighting systems by using the techniques such as those in Table 4.9 according to applicability (see Section 3.10)…	
Waste Incineration – BREF 08.2006	**4.6.11.1 Cement solidification of FGT residues** **Description** Generally the residues are mixed with mineral or hydraulic binders (e.g. cement, coal fly ash, etc.), additives to control the properties of the cement (generally, to lower the Pb-leachability, silica based reagents are used, and to lower other metals, sulphide based reagents are used), and enough water to ensure that hydration reactions will take place for binding of the cement. The residues are thereby incorporated in the cement matrix. Typically, the residues will react with water and the cement to	The procedure for solidification of FGT residue at the proposed development is in line with this section of BREF. Cement solidification involves the mixing of wastes with cement (or alternative materials) and additives (to control the properties of the cement), and enough water to ensure that hydration reactions will take place to bind the cement. Both stabilisation and solidification processes take place. The wastes

BREF	Relevant BAT requirement(s)	How the issue is addressed in MEHL application
	form metal hydroxides or carbonates which are usually less soluble than the original metal compounds in the residue matrix. Cement-based solidification techniques rely on equipment that is readily available. The mixing and handling associated with the processes are well developed and the technique is robust with respect to variations in residue characteristics. The solidified product is generally either landfilled in surface level or underground facilities, or utilised as backfilling material in old salt mines. Note that, in some cases mine deposition is prohibited by locally applicable legislation, in other cases it is carried out by direct filling of untreated residues that are packed into suitable containers (e.g. in big bags). [64, TWGComments, 2003] **Achieved environmental benefits** The main advantage of cement solidification is the reduced contact between water and the residue and to some extent the possible formation of less soluble metal hydroxides or carbonates. The solidified product is relatively easy to handle, and the risk of dusting is very low. The release of heavy metals from the products in a short-term perspective is typically relatively low, however, the high pH of cement-based systems can result in significant leaching of amphoteric metals (Pb and Zn). The drawbacks of this method are that leaching of soluble salts is not hampered and that this will eventually result in physical disintegration of the solidified product, thus allowing further leaching. The addition of cement and additives increases the amount of waste to be handled; typically about 50 % of the residue dry weight is added as cement and additives and 30 to 100 % of the total dry weight is added as water [4, IAWG, 1997]. Thus, the residue output from fly ash is typically increased from 20 - 30 kg/t waste input to about 40 - 60 kg/t waste, including addition of water corresponding to 50 % of the total dry weight. **Cross-media effects** The technique does in some cases facilitate utilisation of the residues as backfilling or construction material in the mining industry. The use of this technique implies consumption of cement, additives and water. **Operational data** Energy and water consumption varies and is not quantified. The operation and control of equipment used by the technique is considered relatively simple and comparable with standard practices in concrete industry.	are thereby incorporated into the cement matrix. The extent and nature of pre-treatment will depend on the residue properties and the acceptance criteria at the landfill. Typically, the process involves mixing cement/binders, water and the residues together on a continuous basis or in a batch process. Hydrochloric acid (HCl) is typically required to modify the pH.

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	Applicability Solidification is typically performed at dedicated plants located near the end-destination of the product; thus, individual incinerators have no need to install solidification equipment. The technique can be used on all types of FGT residues. Solidification with cement has also been used on many other types of hazardous wastes, including for the disposal of low-level radioactive waste. **Economics** In most cases, the residues can be delivered to existing plants. Treatment costs for cement solidification alone may vary a lot according to the country, and they are estimated to be about EUR 25 per tonne residue [38, Vehlow, 2002]. **Driving force for implementation** The technique is relatively simple and the necessary technical knowledge is readily available. Also, the leaching characteristics of the solidified product are improved considerably compared to the untreated residues. Stabilisation of FGT residues by cement solidification has also been used and is considered acceptable by authorities in many countries worldwide. **Example plants** The technique is probably the most common method for the treatment of FGT residues and is widely used in Europe and Japan. The main types of cement solidification are listed below: Table 4.89: Variations in solidification treatments for FGT residues between some countries Source [48, ISWA, 2003], [64, TWGComments, 2003]	
Waste Treatment – BREF 08.2006	**Environmental management** 1. implement and adhere to an EMS that incorporates, as appropriate to individual circumstances, the following features (see Section 4.1.2.8)… 2. ensure the provision of full details of the activities carried out on-site. A good detail of that is contained in the following documentation (see Section 4.1.2.7 and related to BAT number 1.g)… 3. have a good housekeeping procedure in place, which will also cover the maintenance procedure, and an adequate training programme, covering the preventive actions that workers need to take on health and safety issues and environmental risks (see Sections 4.1.1.4, 4.1.1.5, 4.1.2.5, 4.1.2.10, 4.1.4.8 and 4.1.4.3)	The facility holds ISO14001:2004 accreditation, the international standard for Environmental Management Systems (EMS). This system ensures legal compliance with all relevant legislation. The EMS will be reviewed and updated to include waste activities as per the proposed integrated waste management facility. Full details of proposed activities are included in the Waste Licence Application, Dec. 2010. The existing Environmental, Health & Safety training programme at MEHL will be extended to address requirements of operating the

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	4. try to have a close relationship with the waste producer/holder in order that the customers sites implement measures to produce the required quality of waste necessary for the waste treatment process to be carried out (see Section 4.1.2.9) 5. have sufficient staff available and on duty with the requisite qualifications at all times. All personnel should undergo specific job training and further education (see Section 4.1.2.10. This is also related to BAT number 3)	integrated waste management facility. Staff will be appropriately trained and qualified for the various elements of the operation. There will be ongoing and updated training, refresher programmes and extensive induction procedures for staff on site at all times, as well as routine and obligatory induction training for visitors regarding Environmental, Health & Safety procedures for those who are necessarily visiting or entering the site. The facility's management team and operational staff will be competent on the basis of education, skills, training and experience. MEHL will continue to work with its customer base to further objectives of the Waste Acceptance Procedure.
	Waste IN 6. have a concrete knowledge of the waste IN. Such knowledge needs to take into account the waste OUT, the treatment to be carried out, the type of waste, the origin of the waste, the procedure under consideration (see BAT number 7 and 8) and the risk (related to waste OUT and the treatment) (see Section 4.1.1.1). Guidance on some of these issues is provided in Sections 4.2.3, 4.3.2.2 and 4.4.1.2 7. implement a pre-acceptance procedure containing at least the following items (see Section 4.1.1.2)… 8. implement an acceptance procedure containing at least the following items (see Section 4.1.1.3)… 9. implement different sampling procedures for all different incoming waste vessels delivered in bulk and/or containers. These sample procedures may contain the following items (see Section 4.1.1.4): 10. have a reception facility covering at least the following issues (see Section 4.1.1.5):…	Wastes will be subject to rigorous Waste Acceptance Procedures, including Waste Acceptance Criteria (WAC) testing to determine their suitability for waste acceptance. Further detail is provided in the Waste Licence Application, Dec. 2010.
	Waste OUT 11. analyse the waste OUT according to the relevant parameters important for the receiving facility (e.g. landfill, incinerator) (see Section 4.1.1.1)	Only permitted/licensed waste collectors and facilities, with EPA pre-approval, will be used for removal off-site. Full records will be maintained.

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	Management Systems 12. have a system in place to guarantee the traceability of waste treatment. Different procedures may be needed to take into account the physico-chemical properties of the waste (e.g. liquid, solid), type of WT process (e.g. continuous, batch) as well as the changes that may occur to the physico-chemical properties of the wastes when the WT is carried out. A good traceability system contains the following items (see Section 4.1.2.3)… 13. have and apply mixing/blending rules oriented to restrict the types of wastes that can be mixed/blended together in order to avoid increasing pollution emission of down-stream waste treatments. These rules need to consider the type of waste (e.g. hazardous, nonhazardous), waste treatment to be applied as well as the following steps that will be carried out to the waste OUT (see Section 4.1.5) 14. have a segregation and compatibility procedure in place (see Section 4.1.5 and this is also related to BAT number 13 and 24.c), including… 15. have an approach for improving waste treatment efficiency. This typically includes the finding of suitable indicators to report WT efficiency and a monitoring programme (see Section 4.1.2.4 and this is also related to BAT number 1) 16. produce a structured accident management plan (see Section 4.1.7) 17. have and properly use an incident diary (see Section 4.1.7 and related to BAT number 1 and to quality management system) 18. have a noise and vibration management plant in place as part of the EMS (see Section 4.1.8 and this is also related to BAT number 1). For some WT installations, noise and vibration may not be an environmental problem 19. consider any future decommissioning at the design stage. For existing installations and where decommissioning problems are identified, put a programme to minimise these problems in place (see Section 4.1.9 and this is also related to BAT number 1.i).	The facility holds ISO14001:2004 accreditation, the international standard for Environmental Management Systems (EMS). This system ensures legal compliance with all relevant legislation. The EMS will be reviewed and updated to include waste activities as per the proposed integrated waste management facility. Systems for waste traceability and mixing are included in the Waste Licence Application (Dec. 2010). Accident/incident management system in place. Noise management system in place. Decommissioning requirements considered in CRAMP (May 2013).
	Utilities and raw material managements 20. provide a breakdown of the energy consumption and generation (including exporting) by the type of source (i.e. electricity, gas, liquid conventional fuels, solid conventional fuels and waste) (see Section 4.1.3.1 and related to BAT number 1.k). 21. continuously increase the energy efficiency of the installation, by (see Section 4.1.3.4):	In terms of the proposed integrated waste management facility, a new electricity connection will be brought to the new site office/weighbridge, solidification plant and storage building. It is proposed to construct an ESB substation at the facility control area.

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	22. carry out an internal benchmarking (e.g. on an annual basis) of raw materials consumption (related to BAT number 1.k). Some applicability limitations have been identified and these are mentioned in Section 4.1.3.5 23. explore the options for the use of waste as a raw material for the treatment of other wastes (see Section 4.1.3.5). If waste is used to treat other wastes, then to have a system in place to guarantee that the waste supply is available. If this cannot be guaranteed, a secondary treatment or other raw materials should be in place in order to avoid any unnecessary waiting treatment time (see Section 4.1.2.2)	The solidification plant will use electrical power for small motors to operate the dosing and mixing units. MEHL will specify energy-efficient design, construction, plant and equipment at detailed design phase. Records of energy use will be monitored as part of an Energy Management System, which will identify opportunities for energy efficiency measure. Records will be maintained on site and reported to the EPA in the AER in accordance with licence conditions.
	Storage and handling 24. apply the following techniques related to storage (see Section 4.1.4.1)… 25. separately bund the liquid decanting and storage areas using bunds which are impermeable and resistant to the stored materials (see Section 4.1.4.4) 26. apply the following techniques concerning tank and process pipework labelling (see Section 4.1.4.12)… 27. take measures to avoid problems that may be generated from the storage/accumulation of waste. This may conflict with BAT number 23 when waste is used as a reactant (see Section 4.1.4.10) 28. apply the following techniques when handling waste (see Section 4.1.4.6)… 29. ensure that the bulking/mixing to or from packaged waste only takes place under instruction and supervision and is carried out by trained personnel. For certain types of wastes, such a bulking/mixing needs to be carried out under local exhaust ventilation (see Section 4.1.4.8) 30. ensure that chemical incompatibilities guide the segregation required during storage (see Section 4.1.4.13 and 4.1.4.14 and this is also related to BAT number 14) 31. apply the following techniques when containerised wastes are handled (see Section 4.1.4.2)…	Waste storage and handling has been considered in detail in the Waste Licence Application, Dec. 2010.
	Other common techniques not mentioned above 32. perform crushing, shredding and sieving operations in areas fitted with extractive vent systems linked to abatement equipment (see Section 4.1.6.1) when handling materials that	Not applicable.

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	can generate emission to air (e.g. odours, dust, VOCs) 33. perform crushing/shredding operations (see Sections 4.1.6.1 and 4.6) under full encapsulation and under an inert atmosphere for drums/containers containing flammable or highly volatile substances. This will avoid ignition. The inert atmosphere is to be abated 34. perform washing processes considering (see Section 4.1.6.2)…	
	Air emissions treatments 35. restrict the use of open topped tanks, vessels and pits by… 36. use an enclosed system with extraction, or under depression, to a suitable abatement plant. This technique is especially relevant to processes which involve the transfer of volatile liquids, including during tanker charging/discharging (see Section 4.6.1) 37. apply a suitably sized extraction system which can cover the holding tanks, pretreatment areas, storage tanks, mixing/reaction tanks and the filter press areas, or to have in place a separate system to treat the vent gases from specific tanks (for example, activated carbon filters from tanks holding waste contaminated with solvents) (see Section 4.6.1) 38. correctly operate and maintain the abatement equipment, including the handling and treatment/disposal of spent scrubber media (see Section 4.6.11) 39. have a scrubber system in place for the major inorganic gaseous releases from those unit operations which have a point discharge for process emissions. Install a secondary scrubber unit to certain pretreatment systems if the discharge is incompatible, or too concentrated for the main scrubbers (see Section 4.6.11) 40. have leak detection and repair procedures in place in installations a) handling a large number of piping components and storage and b) compounds that may leak easily and create an environmental problem (e.g. fugitive emissions, soil contamination) (see Section 4.6.2). This may be seen as an element of the EMS (see BAT number 1) 41. reduce air emission to the following levels…	The solidification process will be undertaken within a fully enclosed building. The unloading process will be undertaken after closing the roller shutter doors, fixing an exhaust extractor to the bulk tanker and connecting to the manifold to pump material into the silos.
	Waste water management 42. reduce the water use and the contamination of water by (see Sections 4.1.3.6 and 4.7.1)… 43. have procedures in place to ensure that the effluent specification is suitable for the on-site effluent treatment system or discharge (see	It is proposed to collect all foul water generated on the site by means of a separate foul sewer system. The effluent will be domestic type from toilet and canteen facilities. Foul domestic water will be generated from the kitchen,

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	Section 4.7.1) 44. avoid the effluent by-passing the treatment plant systems (see Section 4.7.1) 45. have in place and operate an enclosure system whereby rainwater falling on the processing areas is collected along with tanker washings, occasional spillages, drum washings, etc. and returned to the processing plant or collected in a combined interceptor (see Section 4.7.1) 46. segregrate the water collecting systems for potentially more contaminated waters from less contaminated water (see Section 4.7.2) 47. have a full concrete base in the whole treatment area, that falls to internal site drainage systems which lead to storage tanks or to interceptors that can collect rainwater and any spillage. Interceptors with an overflow to sewer usually need automatic monitoring systems, such as pH checks, which can shut down the overflow (see Section 4.1.3.6 and this is also related to BAT number 63), 48. collect the rainwater in a special basin for checking, treatment if contaminated and further use (see Section 4.7.1) 49. maximise the re-use of treated waste waters and use of rainwater in the installation (see Section 4.7.1) 50. conduct daily checks on the effluent management system and to maintain a log of all checks carried out, by having a system for monitoring the effluent discharge and sludge quality in place (see Section 4.7.1) 51. firstly identify waste waters that may contain hazardous compounds (e.g. adsorbable organically bound halogens (AOX); cyanides; sulphides; aromatic compounds; benzene or hydrocarbons (dissolved, emulsified or undissolved); and metals, such as mercury,cadmium, lead, copper, nickel, chromium, arsenic and zinc) (see Section 4.7.2). Secondly, segregate the previously identified waste water streams on-site and thirdly, specifically treat waste water on-site or off-site. 52. ultimately after the application of BAT number 42, select and carry out the appropriate treatment technique for each type of waste water (see Section 4.7.1) 53. implement measures to increase the reliability with which the required control and abatement performance can be carried out (for example, optimising the precipitation of metals) (see Section 4.7.1) 54. identify the main chemical constituents of the treated effluent (including the make-up of	toilets and washing facilities located in the administration building and in the solidification building. All effluent will be collected in a sealed underground pipework system and discharged to a domestic type treatment plant with treated effluent percolated to ground. The foul effluent from the Solidification Plant will be pumped to the package treatment unit, as the treatment plant is at a higher level. The onsite wastewater packaged treatment plant and raised bed percolation will be located to the east of the administration building. The main foul sewer drainage system for the proposed development is to be designed as a gravity system consisting of a 150mm diameter uPVC pipe laid underground at maximum gradients of 1 in 100. The suitability of the site for an onsite discharge of treated domestic effluent was assessed by EPA approved assessors Waste Water Maintenance Ltd in 2008. Their report concluded that the site was suitable for discharge to ground by providing a mechanical aerated treatment system and gravity type polishing filter constructed with imported fill. The surface water off the roof of the administration building will be collected via an approved 1000 gallon underground rainwater harvesting system, Carlow precast or similar. The harvested rainwater will be reused as grey water within the administration building. The collected leachate will be utilised in the solidification process, as described in the solidification section. The leachate will be used in place of process water, as commonly practiced in Europe. The balancing of the requirement for leachate in the solidification process with rainfall and storage, may require excess leachate to be tankered off site to an EPA licenced waste water treatment plant.

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	the COD) and to then make an informed assessment of the fate of these chemicals in the environment (see Section 4.7.1 and their applicability restrictions identified) 55. only discharge the waste water from its storage after the conclusion of all the treatment measures and a subsequent final inspection (see Section 4.7.1) 56. achieve the following water emission values before discharge	
	Management of the process generated residues 57. have a residue management plan (see Section 4.8.1) as part of the EMS including: 58. maximise the use of re-usable packaging (drums, containers, IBCs, palettes, etc.) (see Section 4.8.1) 59. re-use drums when they are in a good working state. In other cases, they are to be sent for appropriate treatment (see Section 4.8.1) 60. keep a monitoring inventory of the waste on-site by using records of the amount of wastes received on-site and records of the wastes processed (see Section 4.8.3 and this is also related to BAT number 27) 61. re-use the waste from one activity/treatment possibly as a feedstock for another (see Section 4.1.2.6 and this is also related to BAT number 23)	Waste records will be retained and managed, as appropriate to operations.
	Soil contamination 62. provide and then maintain the surfaces of operational areas, including applying measures to prevent or quickly clear away leaks and spillages, and ensuring that maintenance of drainage systems and other subsurface structures is carried out (see Section 4.8.2) 63. utilise an impermeable base and internal site drainage (see Section 4.1.4.6, 4.7.1 and 4.8.2) 64. reduce the installation site and minimise the use of underground vessels and pipework (see Section 4.8.2 and this is also related to BAT number 10.f, 25, and 40)	The primary aim of the proposed surface water management system is to avoid potential adverse impacts on the receiving watercourse in terms of water quality and flow. The drainage system proposed for dealing with surface water runoff from the proposed development will follow the principles of Sustainable Drainage Systems (SuDS) as detailed in Chapter 6 of Volume 3 Environmental Management, of the Greater Dublin Strategic Drainage Study (GDSDS). Surface water runoff will be captured close to its source and released slowly into a local stream along the northern site boundary. A treatment train approach will allow for effective reduction in pollutants from the site and the provision of storm water attenuation will allow the site to mimic Greenfield runoff conditions thereby mitigation adverse flow

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		impacts.
Monitoring of emissions from IED-installations – REF 07.2003	This document provides information to guide IPPC permit writers and operators of IPPC installations in meeting their obligations under the Directive with regard to monitoring requirements of industrial emissions at source.	Due regard will be taken of monitoring requirements at the operational stage.

BAT has also been applied to the design proposals for the integrated waste management facility, to ensure the highest levels of engineering and operational control. BAT principles will be further addressed as part of the detailed design stage (prior to commencement of construction) and under the supervision/management of a competent person.

MEHL (Murphy Environmental Hollywood Ltd.)

Baseline Report in Accordance with Section 86B of the EPA Act 1992, as Amended

March 2014

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