1. INTRODUCTION

This document is a response to a request for further information ('Requested Information') regarding a number of issues from the Environmental Protection Agency (EPA) in relation to the IE application Ref: W0242-02 for a materials processing and transfer facility at the Millennium Business Park, Cappagh Road, Dublin 11, made by Thorntons Recycling.

This request was contained in correspondence from the EPA, dated 15th May 2017.

1.1 Specific queries raised by the EPA

6 no. points were identified in correspondence of the 15th May 2017, reproduced as follows:

1. *General*

- *Confirm what waste types are proposed to be accepted under the List of Waste codes 03 01 99 and 19 12 12.*
- *Elaborate on the detail of the waste treatment activities that are proposed to be carried out under the classes of activity listed in Annex I and Annex II of the Waste Framework Directive, namely D13, R3, R4 and R5.*
- *Clarify whether any waste is or is proposed to be accepted at the installations for the purposes of treatment for disposal or storage pending disposal elsewhere.*
- *Clarify the recovery processes in which it is proposed to utilise the waste wood shredded at the installation.*
- *Wrapped residue waste (SRF) is proposed to be stored in the bale storage shed; however, it has not been proposed to maintain this shed under negative air pressure and to treat the extracted air for odour. State the rationale for proposing that odorous emissions will not arise from municipal waste to prevent odour emissions from this shed.*
- *Confirm how the storage of waste in the main processing building and bale storage shed has been planned to ensure accident prevention and effective emergence response.*
- *Indicate on a drawing the linkage and path between the proposed storm water discharge point SW1, Bachelors Stream and the Tolka River.*
- *Provide details of the applicant's technical knowledge and / or qualifications, along with that of other relevant employees as required by section C.4 of the application form.*

2. *Emissions to Air*

- *Confirm if planning permission ref PL06.P0048 includes permissions for a 20m stack from the carbon filter?*
- *Describe how the proposed carbon filter has been designed to enable its operations under the relevant threshold values specified as model input factors in Table 5 of the odour dispersion model.*
- *Table 5 of the odour dispersion model outlines that an odour concentration of 700 OUE/Nm³ was used as a model input factor; however, the discussion above this table states that the odour emissions rate was based on an odour concentration of 700 OUE/m³. Confirm which unit of measurement were used as an input factor in the model i.e. normalised or not normalised.*
- *Figure 2 indicates that there is an odour plume of maximum of 1.5 OU_E/m^3 at the facility directly north of the proposed installations.*
    - *Confirm if this is the predicted odour plume (Max 1.5 OU_E/m^3) resultant from the model input factors shown in Table 5.*
    - *Clarify why this same plume reduces to a max 1.0 OU_E/m^3 when combined odour impacts are taken into considerations in Figure 3.*

3. *Emission to Sewer*

- *Confirm the destination wastewater treatment plant to which the sewer connection is linked.*
- *In the contact of article 1591) of the IED, provide a comprehensive environmental assessment of the impact of the discharge of trade effluent (via SE1_ on water quality in the receiving water at the point of its discharge to the receiving body.*

4. *Baseline Report*

- *Table 2.2 of the baseline report describes the relevant hazardous substance that will be used at the installation. Confirm if the baseline status of soil and groundwater at the installation demonstrates an absence of these substances.*

5. *BAT*

- *Provide an assessment of the Reference Document on BAT on Emissions from Storage (July 2006) as required by section I.8 of the application form.*

6. *ELRA, Closure Plan and Financial Provision*

- *Update the ELRA and closure plan to include;*
  - *The potential actions and costs required to return the installation to its baseline status.*
  - *The cost for removal of the maximum waste storage capacity of each designated storage area to ensure a worst-case scenario has been considered.*

2. ATTACHMENT A - GENERAL

- *Confirm what waste types are proposed to be accepted under the List of Waste codes 03 01 99 and 19 12 12.*

The List of Waste (LoW) code 03 01 99 is proposed to allow for the acceptance of waste wood from general wood processing activities that may not be assigned the code 03 01 05.

Code 19 12 12 is proposed to allow for the acceptance of materials of municipal origin that may have undergone some element of mechanical treatment but which require further refining in order to produce a quality solid recovered fuel (SRF) material. A practical example may be the acceptance of such material from the Thorntons Recycling Killeen Road facility (W0044-02), where an element of mechanical treatment may be applied to residual municipal materials, followed by further refinement at the proposed facility. In addition, it is envisaged that 19 12 12 material will be received from other third party facilities, whereby it has already undergone a level of processing and sorting, but requires further processing. A quality check will be carried out at the proposed facility on this material to further separate out materials unsuitable for SRF production in order to comply with Thorntons specific SRF outlet specifications, with subsequent processing of this material to the required SRF specification.

- *Elaborate on the detail of the waste treatment activities that are proposed to be carried out under the classes of activity listed in Annex I and Annex II of the Waste Framework Directive, namely D13, R3, R4 and R5.*

D13 Blending or mixing prior to submission to any of the operations numbered D 1 to D 12.2

This class of activity is proposed cover activities related to the 'bulking up' of residual municipal solid waste that may be consigned for disposal, in the event of no appropriate recovery outlet being available at a particular time. In addition, it is proposed to cover any element of processing that may be applied to residual MSW with the SRF processing line that produces rejects, that may be sent for disposal, should no alternative recovery activities be available at a particular time.

R3 Recycling /reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)

This class of activity is proposed to addresses instances where wood materials accepted may be suitable for direct application to a recycling activity and to address instance where card/paper material could be reclaimed for direction to a recycling process.

R4 Recycling/reclamation of metals and metal compounds

This activity is proposed to cover instances where metals will be extracted during the SRF production process using magnetic and eddy current separators, which will be consigned from the site for recycling.

R5 Recycling/reclamation of other inorganic materials

This activity is proposed to cover instances where hard plastics, unsuitable for SRF production, will be extracted during the production process using optical and ballistics separators, which will be consigned from the site for recycling.

- *Clarify whether any waste is or is proposed to be accepted at the installations for the purposes of treatment for disposal or storage pending disposal elsewhere.*

As described in Section 2.3.10 of Chapter 2 'Description of the Proposed Development' of the EIS document submitted to accompany the IE application relating to W0242-02, the proposed facility is intended be operated in such a manner as to ensure that the vast majority of materials to be accepted at the facility will be processed in accordance with an appropriate recovery class of activity and/or consigned from the facility to a recovery or recycling activity i.e. SRF material to cement kiln thermal recovery, waste wood to further recycling activity (e.g. shredding), biowaste to biological treatment and residual MSW not used in SRF production to thermal treatment.

However, there may be instances where residual MSW (not utilised in SRF production) accepted at the facility may be consigned for disposal due to, for example, lack of available thermal recovery facility at specific time of the year due to facility downtime. In these instances, residual MSW may be consigned from the site for disposal at appropriate landfill facilities either directly from the facility, where 'storage pending disposal' would apply or where disposal may be required for materials resulting from the SRF production process, where 'treatment for disposal' would apply.

- *Clarify the recovery processes in which it is proposed to utilise the waste wood shredded at the installation.*

Please note that no processing of any kind of green waste or waste wood will occur – please note the following paragraph included in Section1.4 (page 5) of the Outline CEMP (Appendix 1 to the EIS document provided with the IE application) is an erratum and should be disregarded:

"Waste wood collected by Thorntons Recycling and other third party operators will be accepted at the facility for processing prior to consignment offsite. Processing will comprise two stage shredding of wood, as well as magnetic and eddy current separation to remove metals that may be contained therein. Processing of wood will occur externally in a designated area within the site."

The accurate description of activities related to waste wood and green waste acceptance at the proposed facility is as outlined on page 21 of section 2.3.10 of Chapter 2 – 'Description of the Proposed Development' of Volume 2 of the EIS.

Wood will be separated, stored temporarily and bulked on site prior to consignment to Thorntons Recycling wood chipping facility, which operates in Fassaroe under licence W053-03. Once wood is accepted at this facility, it will be processed into a shredded wood chip material. The wood chip is consigned to an end user, such as Eirbloc Ltd., Lissarda, Co. Cork (WCP-CK-11-0087-02).

- *Wrapped residue waste (SRF) is proposed to be stored in the bale storage shed; however, it has not been proposed to maintain this shed under negative air pressure and to treat the extracted air for odour. State the rationale for proposing that odorous emissions will not arise from municipal waste to prevent odour emissions from this shed.*

The rationale for not proposing the operation of the bale storage shed under negative air pressure with associated air treatment is based on the nature of the material proposed to be stored within the shed. As outlined in Section 2.3.10 of Chapter 2 – 'Description of the Proposed Development' of Volume 2 of the EIS, the SRF production process will utilise a range of mechanical plant in order to produce a material that is of appropriate high quality specification for acceptance at cement kiln facilities.

In order to produce an SRF material to the required specification, Thorntons Recycling will target residual MSW of commercial origin as much as possible for acceptance at the facility, given that commercial residual MSW, by it's composition, produces a drier, higher grade SRF material, as well as containing a lower composition of organic material, thus minimising the odour generation potential of the incoming material.

By the application of mechanical screening (trommelling) as part of the SRF production process, the fines fraction, potentially comprising an odour generating organic fraction, will be separated from the SRF material.

The Bale Storage Building is proposed to be utilised for only a short duration in any given year, which corresponds to any period when cement kilns may be unavailable due to scheduled or unscheduled maintenance. In a typical year, this can be expected to be between 4-8 weeks. At these times, SRF will be baled within the processing building and the bales transferred to the storage building so that SRF production can continue. When the kiln outlets are available again, this SRF will be de-baled within the processing building and consigned from site.

Therefore, the following points comprise the rationale for not proposing active odour control within the Bale Storage Building:

- The production of SRF to a high specification requiring a low moisture content and organic content, thus being material of low odour generation potential
- The short duration of Bale Storage Building utilisation in an average year
- The wrapped nature of the bales, which will be subject to regular checks of wrap integrity, which itself will mitigate potential for odour emissions

- *Confirm how the storage of waste in the main processing building and bale storage shed has been planned to ensure accident prevention and effective emergency response.*

Thorntons Recycling have an emergency response plan for each site with site-specific risk assessments and drawings. Please refer to Appendix 1 for Thorntons Recycling Emergency Response Plan 2016, which will be amended for activities specific to the proposed facility at Millennium Business Park prior to commencement of operations. All Thorntons Recycling employees receive fire-fighting instructions and fire wardens are identified and trained. At each facility, a full evacuation is completed per annum and a site evacuation procedure is in place at all facilities. Other features Thorntons Recycling will have in place at the proposed facility to ensure accident prevention and effective emergency response are the following:

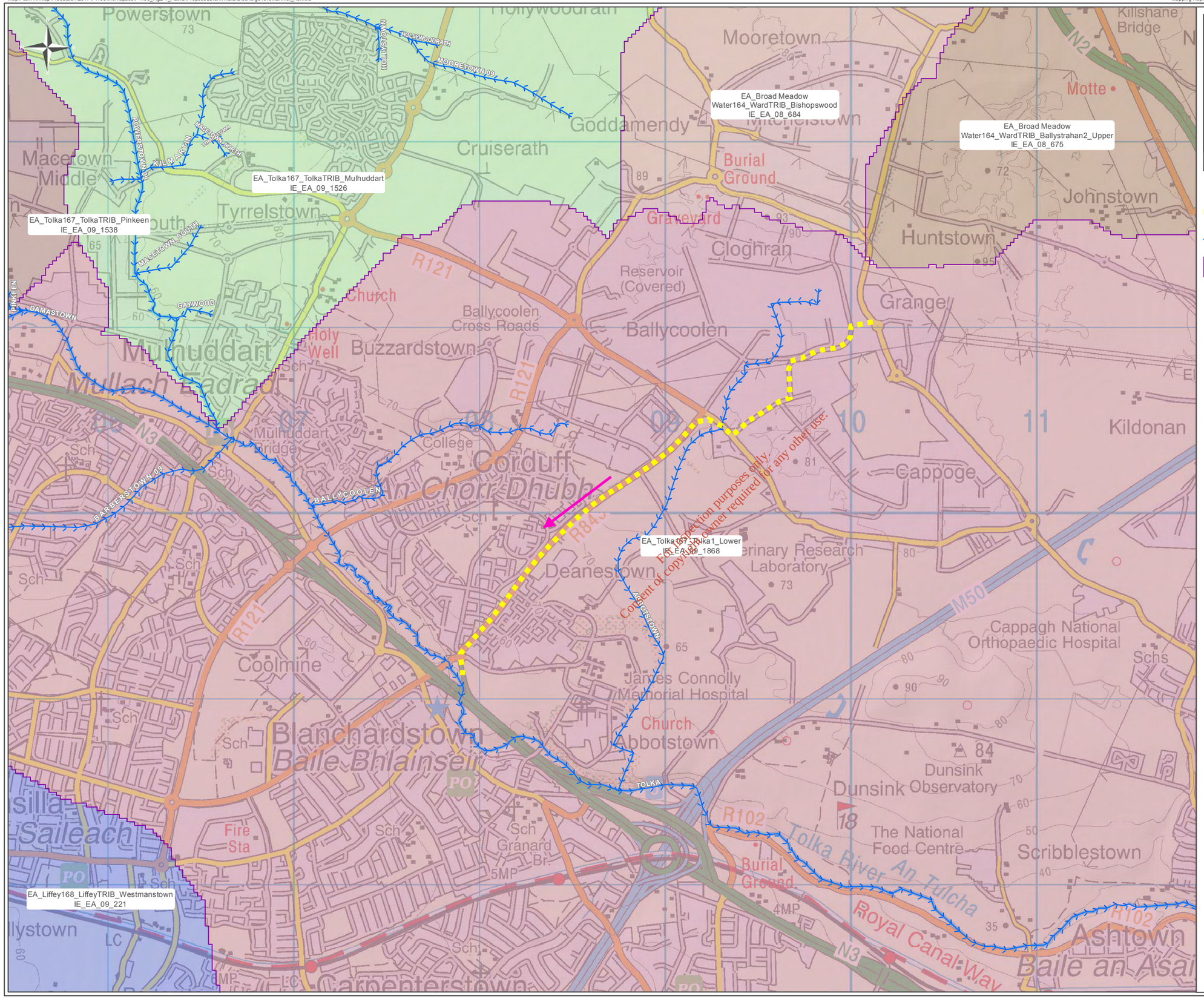
1. Emergency response tested and fire drills will be carried out.
2. Adequate fire equipment (Hose reels, extinguishers etc.) at specific locations as will be recommended by the contractor who tests the fire equipment.
3. Fire detection equipment (A range of infra-red and smoke detection etc.) depending on what the fire consultants recommends once built.
4. Thorntons Recycling have a fire response plan which identifies the most suitable emergency response in the event of a fire starting on a specific piece of equipment – automatic fire suppression will be installed on relevant pieces of equipment as required
5. List of all emergency contact details at the proposed facility to be developed

Thorntons Recycling will also undertake a fire risk assessment (FRA) within a specified time of grant of any licence by an independent and appropriately qualified consultant in accordance with the following guidance:

- EPA (2016) Guidance on Fire Risk Assessment for Non-Hazardous Waste Facilities
- EPA (2013) Guidance Note – Fire Safety at Non-Hazardous Waste Transfer Stations
- EPA (1995) Draft Guidance Note to Industry on the Requirements for Fire-Water Retention Facilities
- UK Environment Agency (2013) Reducing fire risk at sites storing combustible materials: Technical Guidance Note 7.01

- *Indicate on a drawing the linkage and path between the proposed storm water discharge point SW1, Bachelors Stream and the Tolka River.*

From Figure 2.1 please note the linkages and pathway between the proposed storm water discharge point SW1 to the Tolka River. The storm water from the entire Millennium Business Park, to which the proposed development adjoins at SW1, flows in a piped system to the discharge point directly into the Tolka River
The information that facilities the development of Figure 1-1 has been provided by the operators of the Millennium Business Park.



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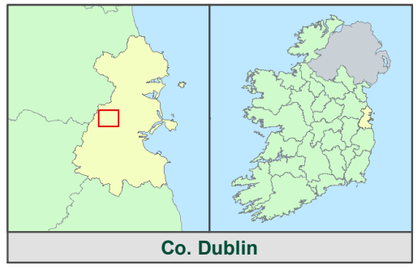

Legend

- Proposed Pathway
- Rivers
- River Catchment Boundaries

Figure Title
Path of Proposed Storm Water Discharge to Tolka River

Figure No. 2.1

Project
Millennium Park IE RFI

Client
Thorntons Recycling

Scale 1:20,000 **Page Size** A3

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- *Provide details of the applicant's technical knowledge and / or qualifications, along with that of other relevant employees as required by Section C.4 of the application form.*

Please see below the relevant information for the competencies of key staff for the development of Millennium Business Park:

Gary Brady: CEO Thorntons

Gary is qualified as a member of the Institute of Accounting Technicians in Ireland (1991) and is also a member of the Institute of Certified Public Accountants in Ireland (1994).

Paul Thornton: Director / Owner

Paul Thornton is an owner and Director of Thorntons Recycling and has experience in developing and managing similar waste facilities in Ireland. Paul will oversee the operations of the proposed Millennium Business Park Facility and will liaise directly with the facility manager which will be appointed on the development of the facility.

David Duff: Environmental Health & Safety Manager

David has a BA (Mod) Environmental Science and a Masters in Environmental Science completed in Trinity College, Dublin. David has fourteen years' waste management and recycling experience and is a member of the Chartered Institution of Waste Management. David has a diploma in Project Management completed in 2016 and is certified in energy management, carbon foot printing, noise monitoring, internal auditing and is currently completing the NEBOSH International Diploma in Health and Safety. David has also received the accredited FETAC national Skills Certificate for Waste Management and has managed the operations of a number of waste facilities including a large material recovery facility.

David is currently working as the Environmental Health & Safety Manager for Thorntons Recycling, overseeing the environmental health & safety compliance for the collection fleet and on all waste licensed and waste permitted facilities owned and operated by the company. David also has responsibility for the sale of recyclable materials for the company and will be responsible for ensuring that the destinations for the material leaving the facility will be consigned to appropriate facilities.

The EHS team that will assist with the development and complaint operation of the facility consists of:

Sandra Kiely: Environmental Health & Safety Officer

Sandra graduated from the National University of Ireland, Galway with an M.Sc. in Occupational Health & Safety and Ergonomics following completion of a B.Sc. in Microbiology. Sandra has worked as an Industrial Hygienist in the semiconductor industry prior to joining Thorntons Recycling. Sandra has previously competed a Professional Certificate in Radiation safety from UCD and a Certificate of Competence in Work Place Noise Risk Assessment from the Institute of Acoustics. Sandra has successfully completed the Waste Management Training Programme.

Sandra is currently working as an Environmental Health & Safety Officer for Thorntons Recycling and has responsibility for the environmental compliance of a number of Thorntons permitted facilities. Sandra also is responsible for visiting each site and maintaining risk assessments and carrying out EHS compliance audits to ensure continual improvement. Sandra also is tasked with increasing awareness and education among staff of their Health and Safety duty of care to ensure a safe work environmental for all employees.

Fergal Brennan: Environmental Health & Safety Officer

Fergal has a B.A(Hons) Environmental & Natural Resource Management from the Limerick Institute of Technology. Fergal has previously worked in the Recycling Industry before being the Environmental Coordinator within the food industry. Fergal is currently studying for a Diploma in Health and Safety with Sligo IT.

Fergal is currently working as an Environmental Health & Safety Officer for Thorntons Recycling and has responsibility for the environmental compliance for Thorntons largest facility at Killeen Road. Fergal also has responsibility for the environmental compliance of the Thorntons National Waste Collection Permit, for the upgrade works on the odour abatement system in Killeen road (2017) and for project work on other Thorntons facilities. Fergal has assisted with the Planning and EPA licence application for the proposed Millennium Business Park facility from the outset.

3. ATTACHMENT B – EMISSIONS TO AIR

- *Confirm if planning permission ref PL06.P0048 includes permissions for a 20m stack from the carbon filter?*

Permission was granted for PL06.P0048 on the 25th of May 2017, as per the An Bord Pleanala Notification of Decision included in Appendix 2.

Drawings of the 20 metre stack from the planning application can be seen in Appendix 3. Drawings tilted 'Waste Processing Building 3D views: LW15-046-02 - P-009' and 'Waste Processing Building elevations: LW15-046-02 - P-007' demonstrate the presence of the 20 metre stack in the planning application.

- *Describe how the proposed carbon filter has been designed to enable its operations under the relevant threshold values specified as model input factors in Table 5 of the odour dispersion model.*

An overview document outlining the basic design principles for the overall odour management system for the proposed facility is included in Appendix 4 to this document. This document described the proposed system in terms of the principles of odour control including odour containment, odour extraction and capture and treatment.

- *Table 5 of the odour dispersion model outlines that an odour concentration of 700 OUE/Nm³ was used as a model input factor; however, the discussion above this table states that the odour emissions rate was based on an odour concentration of 700 OUE/m³. Confirm which unit of measurement were used as an input factor in the model i.e. normalised or not normalised.*

AWN Consulting prepared the odour model provide with the application and were requested to provide the response to Question 2 (c). Please see AWN Consulting Technical Note provided in Appendix 5.

- *Figure 2 indicates that there is an odour plume of maximum of 1.5 OU_E/m^3 at the facility directly north of the proposed installations.*
  - *Confirm if this is the predicted odour plume (Max 1.5 OU_E/m^3) resultant from the model input factors shown in Table 5.*
  - *Clarify why this same plume reduces to a max 1.0 OU_E/m^3 when combined odour impacts are taken into considerations in Figure 3.*

AWN prepared the odour model provide with the application and were requested to provide the response to Question 2 (d). Please see AWN Consulting Technical Note provided in Appendix 5.

4. ATTACHMENT C – EMISSIONS TO SEWER

- *Confirm the destination wastewater treatment plant to which the sewer connection is linked.*

Millennium Business Park, Cappagh Road, Dublin 11 is connected to Ringsend Waste Water Treatment Plant (D0034-01). This has been confirmed by the Water Services Department of Fingal County Council, as per the email included in Appendix 6.

- *In the contact of article 1591) of the IED, provide a comprehensive environmental assessment of the impact of the discharge of trade effluent (via SE1) on water quality in the receiving water at the point of its discharge to the receiving body.*

The issue of potential impacts on receiving waters from trade effluent discharge from the proposed facility via treatment through dedicated wastewater treatment followed by subsequent discharge to receiving waters, was addressed as part of the Appropriate Assessment (AA) Screening prepared and submitted with this application, as Appendix 17 to the EIS submitted (Table 3-4, page 28). At the time of preparation of the AA Screening report, the destination wastewater treatment plant was not confirmed and potential impacts resulting from discharge form a number of wastewater treatment plants was assessed. Knowing now that the destination treatment plant is Rinsgend Wastewater treatment plant, the assessment undertaken as part of the AA is revised below, with reference to the capacity of the Ringsend wastewater treatment Plant.

The wastewater discharge will orientate from the vehicle washings, drainage from the materials recovery shed, and yard area where waste processing and handling take place. It flows then to a silt trap and oil interceptor, before entering the municipal sewer system. During the operational phase of the proposed development, sanitary foul water flow from the administration building, and assuming a maximum of 12 persons working at the facility, wastewater loading is calculated using the 'EPA Wastewater Treatment Manual, Treatment Systems for Small Communities, Business, leisure Centres and Hotels' for an industrial office and/or factory with canteen at:

- *Flow - 60 l/day per person*
- *BOD – 30 g/day per person*

This results in 0.72m³ per day of sanitary foul water.

Therefore, the total maximum daily foul water flow from the site is estimated at 8.72m³ (allowing for a maximum of 8 cu.m from wash down events). While this represents the maximum flow, it is anticipated that there will typically be a flow of between 2-3m³ per day as intermittent wash down occurs and/or leachate drains to the collection network within the waste reception and storage building. This equates to a population equivalent (p.e.) of 100 p.e. The foul water discharge from the site will discharge to Ringsend Waste Water Treatment Plant (1.64 million p.e.). At 100 p.e., this would contribute 0.00006% of the loading to Ringsend.

The primary discharge from Ringsend Waste Water Treatment Plant is the Liffey River Estuary, north of the ESB Ringsend Power Station, which is designated as a sensitive waterbody under the Urban Waste Water Treatment Regulations 2001 (S.I. 254 of 2001). The proposed 100 p.e., which will be 0.00006% of the loading to Ringsend will be inconsequential in relation to the total loading at the Ringsend plant and in terms of contribution to discharge into the Lower Liffey Estuary from the Waste Water Treatment plant.

5. ATTACHMENT D – BASELINE REPORT

- *Table 2.2 of the baseline report describes the relevant hazardous substance that will be used at the installation. Confirm if the baseline status of soil and groundwater at the installation demonstrates an absence of these substances.*

The hazardous substances identified in Table 2.2 of the baseline report are as follows:

Diesel: Diesel Fuel – site plant and vehicles
Diesel: Diesel backup generator
Hydraulic oil: Oil for plant / machines
Engine oil: Oil for plant / machines
BioKill: Active ingredient Permethrin
K-Othrine

Groundwater

FT undertook groundwater monitoring at two of the boreholes at the adjacent Huntstown Quarry in June 2016 to provide a baseline assessment of the underlying groundwater quality. The analysis of the groundwater tested the below parameters, which reflect the oil/fuel substances identified in Table 2.2 of the Baseline Report:

- Extractable Petroleum Hydrocarbons (>C10-C40)
- Total Extractable Petroleum Hydrocarbons (C6-C40)
- Gasoline Range Organics (>C5-C10)
- Extractable Petroleum Hydrocarbons (C6-C10)

The laboratory analysis of the groundwater, included in Appendix 4 of the Baseline Report confirms the absence of the above parameters.

K-Othrine and BioKill were not analysed in the groundwater. These products are insecticide and rodent poison respectively and given the nature of the proposed facility site and the adjacent Huntstown Quarry site, the presence of detectable quantities of these substances was considered to be extremely unlikely.
In terms of the future use of these substances, procedures will be put in place in place for the storage, control and use of these substances. In the case of the BioKill, a professional pest control company will conduct fortnightly checks of all bait points around the proposal facility. All documentation for site visits and reports will be kept onsite. The storage of these baits will be specifically placed away from environmental sensitive areas. In the case of K-Othrine, the presence of insects, mainly flies, will be checked as part of the daily environmental checks and if required additional action will be carried out by the contracted pest control company. The use of K-Othrine will be very seldom. The quantity of K-Othrine and BioKill present at the proposed facility will be very small and stored appropriately.

Soil

In 2007, a site investigation was undertaken at the site by Fehily Timoney and Company (FT) with three trial pits advanced to a maximum depth of 3.7 metres below ground level (m bgl). The hazardous parameters identified on Table 2.2. on the baseline report were not identified and analysed at the time.

As none of the hazardous substances identified on Table 2.2 were subjected to analysing, it is assumed that these substances are not present in the baseline status of the soil.

6. ATTACHMENT E - BAT

- *Provide an assessment of the Reference Document on BAT on Emissions from Storage (July 2006) as required by section I.8 of the application form.*

Section I.8 Application Form: In relation BAT on Emissions from Storage

Conclusions on BAT from the Emissions from Storage BAT reference document	**Applicability Assessment (describe how the technique applies or not to your installation)**	**State whether it is in place or state schedule for implementation**
5.1 Storage of liquids and Liquefied gases **5.1.1.1 General principles to prevent and reduce emissions**		
BAT 1. 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.).	This is considered during the facility design process. The maintenance and inspection plan along with the emergency procedures will be developed in accordance with Thornton's Recycling existing ISO14001 accreditation.	Will be in place at commencement of operations
BAT 2. 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.	To be contained within the plant and machinery maintenance plans in accordance with Thorntons Recycling existing ISO18001 accreditation.	Will be in place at commencement of operations
BAT3. 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.	All tanks will be operated at atmospheric pressure over ground.	Will be in place at commencement of operations
BAT 4. 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.	This will be applicable in the development.	Will be in place at commencement of operations

BAT 5. 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	Relevant considerate will be considered during facility design process on the following parameters the achieved environmental benefits, operability, applicability, energy/waste/cross-media and economically.	Will be in place at commencement of operations
BAT 6. On sites where significant VOC emissions are to be expected, BAT includes calculating the VOC emissions regularly.	N/A – no significant VOC emissions expected	
BAT 7. BAT is to apply dedicated systems; see Section 4.1.4.4.	This is considered during the facility design process.	Will be in place at commencement of operations
5.1.1.2 Tank specific considerations		
Open top tanks **BAT 8.** If emissions to air occur, BAT is to cover the tank by applying: • a floating cover, see Section 4.1.3.2 • a flexible or tent cover, see Section 4.1.3.3, or • a rigid cover, see Section 4.1.3.4. Additionally, with an open top tank covered with a flexible, tent or a rigid cover, a vapour treatment installation can be applied to achieve an additional emission reduction, see Section 4.1.3.15. The type of cover and the necessity for applying the vapour treatment system depend on the substances stored and must be decided on a case-by-case basis.	N/A - No open top tanks in proposed design	No
BAT 9. To prevent deposition that would call for an additional cleaning step, BAT is to mix the stored substance (e.g. slurry), see Section 4.1.5.1.	N/A	No
External floating roof tank **BAT 10.** The BAT associated emission reduction level for a large tank is at least 97 % (compared to a fixed roof tank without measures), which can be achieved when over at least 95 % of the circumference the gap between the roof and the wall is less than 3.2 mm and the seals are liquid mounted, mechanical shoe seals.	N/A - No external floating roof tank in proposed design	No
BAT 11. BAT is to apply direct contact floating roofs (double-deck), however, existing non-contact floating roofs (pontoon) are also BAT. See Section 3.1.2. A dome can be BAT for adverse weather conditions, such as high winds, rain or snowfall. See Section 4.1.3.5.	N/A	No
BAT 12. For liquids containing a high level of particles (e.g. crude oil), BAT is to mix the stored substance to prevent deposition that would call for an additional cleaning step, see Section 4.1.5.1.	N/A	No
Fixed roof tanks **BAT 13.** For the storage of volatile substances which are	N/A – No fixed roof tanks present in proposed design.	No

toxic (T), very toxic (T+), or carcinogenic, mutagenic and reproductive toxic (CMR) categories 1 and 2 in a fixed roof tank, BAT is to apply a vapour treatment installation.		
BAT 14. For other substances, BAT is to apply a vapour treatment installation, or to install an internal floating roof (see Sections 4.1.3.15 and 4.1.3.10 respectively). Direct contact floating roofs and non-contact floating roofs are BAT.	N/A	No
BAT 15. For tanks < 50 m3, BAT is to apply a pressure relief valve set at the highest possible value consistent with the tank design criteria.	This is considered during the facility design process.	Will be in place at commencement of operations
BAT 16. For liquids containing a high level of particles (e.g. crude oil) BAT is to mix the stored substance to prevent deposition that would call for an additional cleaning step, see Section 4.1.5.1.	N/A	No
Atmospheric horizontal tanks **BAT 17.** For the storage of volatile substances which are toxic (T), very toxic (T+), or CMR categories 1 and 2 in an atmospheric horizontal tank, BAT is to apply a vapour treatment installation.	N/A – No atmospheric horizontal tank present in propose design.	No
BAT 18. For other substances, BAT is to do all, or a combination, of the following techniques, depending on the substances stored: • apply pressure vacuum relief valves; see Section 4.1.3.11 • up rate to 56 mbar; see Section 4.1.3.11 • apply vapour balancing; see Section 4.1.3.13 • apply a vapour holding tank, see Section 4.1.3.14, or • apply vapour treatment; see Section 4.1.3.15. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	N/A	No
Pressurised storage **BAT 19.** BAT for draining depends on the tank type, but may be the application of a closed drain system connected to a vapour treatment installation, see Section 4.1.4. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	N/A – No pressurised storage present in proposed design.	No
Lifter roof tanks **BAT 20.** For emissions to air, BAT is to (see Sections 3.1.9 and 4.1.3.14): • apply a flexible diaphragm tank equipped with pressure/vacuum relief valves, or • apply a lifter roof tank equipped with pressure/vacuum relief valves and connected to a vapour treatment installation. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	N/A – No lifter roof tanks present on proposed design	No
Underground and mounded tanks **BAT 21.** For the storage of volatile substances which are toxic (T), very toxic (T+), or CMR categories 1 and 2 in an underground or mounded tank, BAT is to apply a vapour treatment installation.	N/A – No toxic substance will be stored in an underground or mounded tank.	No

BAT 22. For other substances, BAT is to do all, or a combination, of the following techniques, depending on the substances stored: • apply pressure vacuum relief valves; see Section 4.1.3.11 • apply vapour balancing; see Section 4.1.3.13 • apply a vapour holding tank, see Section 4.1.3.14, or • apply vapour treatment; see Section 4.1.3.15. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	The vapour treatment technology will be considered during the facility design process ensuring the control of VOC emissions from gasoline storage tank.	Will be in place at commencement of operations
5.1.1.3 Preventing incidents and (major) accidents		
BAT 23. BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	This is in accordance to Thorntons Health and Safety documents and procedures. All Thorntons Recycling licenced and permitted facilities have achieved and maintained the OHSAS 18001 standard since 2009. This installation will also seek to achieve and maintain these standards.	Will be in place
BAT 24. 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.	This is in accordance to Thorntons Health and Safety documents and procedures. All Thorntons Recycling licenced and permitted facilities have achieved and maintained the OHSAS 18001 standard since 2009. This installation will also seek to achieve and maintain these standards.	Will be in place
BAT 25. 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.	This is considered during the facility design and maintenance process.	Will be in place
BAT 26. 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.	N/A	No
BAT 27. BAT is to prevent stress corrosion cracking (SCC)	N/A	No

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.		
BAT 28. 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.	To be contained within the Environmental Management System (EMS) for the installation which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001, OHSAS 18001 and Quality 9001 accreditation.	Will be in place at commencement of operations
BAT 29. BAT is to apply leak detection on storage tanks containing liquids that can potentially cause soil pollution.	Thorntons Recycling will be storing liquids in accordance to "IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities" (EPA, 2004)	Will be in place at commencement of operations
BAT 30. 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.	Thorntons Recycling will be storing liquids in accordance to "IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities" (EPA, 2004)	Will be in place at commencement of operations
BAT 31. 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.	This is considered during the facility design process.	Will be in place at commencement of operations
BAT 32. 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.	This is considered during the facility design process. The liquid which poses a risk for pollution is fuel for operational machinery and for transport.	Will be in place at commencement of operations
BAT 33. 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.	This is considered during the facility design process.	Will be in place at commencement of operations
BAT 34. For chlorinated hydrocarbon solvents (CHC) in single walled tanks, BAT is to apply CHC-proof laminates to concrete barriers (and containments),	N/A – No chlorinated hydrocarbon solvents will be present on the proposed facility.	No

based on phenolic or furan resins. One form of epoxy resin is also CHC-proof. See Section 4.1.6.1.12.		
BAT 35. 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.	This is considered in the facility process design.	Will be in place at commencement of operations
BAT 36. For toxic, carcinogenic or other hazardous substances, BAT is to apply full containment.	This is considered in the facility process design regarding hazardous substance e.g. fuel	Will be in place at commencement of operations
5.1.2. Storage of packaged dangerous substances		
BAT 37. BAT in preventing incidents and accidents is to apply a safety management system as described in Sections 4.1.6.1. The minimum level of BAT is to assess the risks of accidents and incidents on the site using the five steps described in Section 4.1.6.1	This is in accordance to Thorntons Health and Safety documents and procedures. All Thorntons Recycling licenced and permitted facilities have achieved and maintained the OHSAS 18001 standard since 2009. This installation will achieve and maintain these standards.	Will be in place at commencement of operations
BAT 38. BAT is to appoint a person or persons who is or are responsible for the operation of the store.	This is in accordance to Thorntons Health and Safety documents and procedures. All Thorntons Recycling licenced and permitted facilities have achieved and maintained the OHSAS 18001 standard since 2009. This installation will also seek to achieve and maintain these standards.	Will be in place at commencement of operations
BAT 39. BAT is to provide the responsible person(s) with specific training and retraining in emergency procedures as described in Section 4.1.7.1 and to inform other staff on the site of the risks of storing packaged dangerous substances and the precautions necessary to safely store substances that have different hazards.	To be contained within the EMS for the Installation and the Health and Safety procedures which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001 and OHSAS 18001 accreditation.	Will be in place at commencement of operations
BAT 40. BAT is to apply a storage building and/or an outdoor storage area covered with a roof, as described in Section 4.1.7.2. For storing quantities of less than 2500 litres or kilograms dangerous substances, applying a storage cell as described in Section 4.1.7.2 is also BAT.	N/A	No
BAT 41. BAT is to separate the storage area or building of packaged dangerous substances from other storage, from ignition sources and from other	N/A	No

buildings on- and off-site by applying a sufficient distance, sometimes in combination with fire-resistant walls.		
BAT 42. BAT is to separate and/or segregate incompatible substances. For the compatible and incompatible combinations see Annex 8.3.	This is considered in the facility design process. There will be a storage area called the quarantine area which will be used to separate and/or segregate incompatible substances.	Will be in place at commencement of operations
BAT 43. BAT is to install a liquid-tight reservoir according to Section 4.1.7.5, that can contain all or a part of the dangerous liquids stored above such a reservoir. The choice whether all or only a part of the leakage needs to be contained depends on the substances stored and on the location of the storage (e.g. in a water catchment area) and can only be decided on a case-by-case basis.	N/A	No
BAT 44. BAT is to install a liquid-tight extinguishant collecting provision in storage buildings and storage areas according to Section 4.1.7.5. The collecting capacity depends on the substances stored, the amount of substances stored, the type of package used and the applied fire-fighting system and can only be decided on a case-by-case basis.	Will be developed in accordance to EPA Guidance "Guidance Note: Fire Safety at Non-Hazardous Waste Transfer Stations" (EPA, 2013) and "Guidance on Fire Risk Assessment for Non-Hazardous Waste Facilities" (EPA, 2016). To be contained within the EMS for the Installation and the Health and Safety procedures which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001 and OHSAS 18001 accreditation.	Will be in place within 6 months of commencement of facility operations
BAT 45. BAT is to apply a suitable protection level of fire prevention and fire-fighting measures as described in Section 4.1.7.6. The appropriate protection level has to be decided on a case-by-case basis in agreement with the local fire brigade.	Will be developed in accordance to EPA Guidance "Guidance Note: Fire Safety at Non-Hazardous Waste Transfer Stations" (EPA, 2013) "Guidance on Fire Risk Assessment for Non-Hazardous Waste Facilities" (EPA, 2016). To be contained within the EMS for the Installation and the Health and Safety procedures which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001 and OHSAS 18001 accreditation.	Will be in place within 6 months of commencement of facility operations
BAT 46. BAT is to prevent ignition at source as described in	Will be developed in accordance to EPA	Will be in place within 6 months of

Section 4.1.7.6.1	Guidance "Guidance Note: Fire Safety at Non-Hazardous Waste Transfer Stations" (EPA, 2013) and "Guidance on Fire Risk Assessment for Non-Hazardous Waste Facilities" (EPA, 2016). To be contained within the EMS for the Installation and the Health and Safety procedures which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001 and OHSAS 18001 accreditation.	commencement of facility operations
5.1.3 Basins and lagoons		
BAT 47. Where emissions to air from normal operation are significant, e.g. with the storage of pig slurry, BAT is to cover basins and lagoons using one of the following options: • a plastic cover; see Section 4.1.8.2 • a floating cover; see Section 4.1.8.1, or • only small basins, a rigid cover; see Section 4.1.8.2. Additionally, where a rigid cover is used, a vapour treatment installation can be applied to achieve an extra emission reduction, see Section 4.1.3.15. The need for and type of vapour treatment must be decided on a case-by-case basis.	N/A – No basins and lagoons will be present onsite	No
BAT 48. To prevent overfilling due to rainfall in situations where the basin or lagoon is not covered, BAT is to apply a sufficient freeboard, see Section 4.1.11.1.	N/A	No
BAT 49. Where substances are stored in a basin or lagoon with a risk of soil contamination, BAT is to apply an impervious barrier. This can be a flexible membrane, a sufficient clay layer or concrete, see Section 4.1.9.1	N/A	No
5.2 Transfer and handling of liquids and liquefied gases **5.2.1 General principles to prevent and reduce emissions**		
BAT 50. 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.	N/A	No
BAT 51. 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.	N/A	No

BAT 52. 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.	N/A	No
BAT 53. BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	N/A	No
BAT 54. 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.	N/A	No
5.2.2 Considerations on transfer and handling techniques **5.2.2.1 Piping**		
BAT 55. 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.	N/A	No
BAT 56. 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.	N/A	No
BAT 57. BAT for bolted flange connections (see Section 4.2.2.2.) include: • fitting blind flanges to infrequently used fittings to prevent accidental opening • using end caps or plugs on open-ended lines and not valves • ensuring gaskets are selected appropriate to the process application • ensuring the gasket is installed correctly • ensuring the flange joint is assembled and loaded correctly • where toxic, carcinogenic or other hazardous substances are transferred, fitting high integrity gaskets, such as spiral wound, kammprofile or ring joints.	N/A	No
BAT 58. BAT is to prevent corrosion by: • selecting construction material that is resistant to the product • applying proper construction methods • applying preventive maintenance, and • where applicable, applying an internal coating or adding corrosion inhibitors.	N/A	No
BAT 59. 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.	N/A	No

5.2.2.2 Vapour treatment		
BAT 60. 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.	N/A	No
5.2.2.3 Valves		
BAT 61. 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.	N/A	No
5.2.2.4 Pumps and compressors		
BAT 62. 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.	This is considered in the facility design process to the relevant plant onsite.	Will be in place at commencement of operations
BAT 63. 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.	This is considered in the facility design process to the relevant plant onsite.	Will be in place at commencement of operations

BAT 64. BAT for compressors transferring non-toxic gases is to apply gas lubricated mechanical seals.	This is considered in the facility design process to the relevant plant onsite.	Will be in place at commencement of operations
BAT 65. 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.	N/A – No transferring of toxic gases on the proposed facility.	No
BAT 66. In very high pressure services, BAT is to apply a triple tandem seal system.	N/A – There will be no high-pressure services on the proposed facility.	No
5.2.2.5 Sampling connections		
BAT 67. 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.	N/A – There will be no sampling points for volatile products.	No
5.3 Storage of solids **5.3.1 Open storage**		
BAT 68. BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers, to eliminate the influence of wind and to prevent the formation of dust by wind as far as possible by primary measures. See Table 4.12 for these primary measures with cross-references to the relevant sections.	N/A – No open storage of solids	No
BAT 69. BAT for open storage is to carry out regular or continuous visual inspections to see if dust emissions occur and to check if preventive measures are in good working order. Following the weather forecast by, e.g., using meteorological instruments on site, will help to identify when the moistening of heaps is necessary and will prevent unnecessary use of resources for moistening the open storage. See Section 4.3.3.1.	N/A	No
BAT 70. BAT for long-term open storage are one, or a proper combination, of the following techniques: • moistening the surface using durable dust-binding substances, see Section 4.3.6.1 • covering the surface, e.g. with tarpaulins, see Section 4.3.4.4 • solidification of the surface, see Table 4.13 • grassing-over of the surface, see Table 4.13.	N/A	No
BAT 71. BAT for short-term open storage are one, or a proper combination, of the following techniques: • moistening the surface using durable dust-binding substances, see Section 4.3.6.1 • moistening the surface with water, see Sections 4.3.6.1 • covering the surface, e.g. with tarpaulins, see Section 4.3.4.4.	N/A	No
5.3.2 Enclosed storage		
BAT 72. 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.	This is considered in the facility design process. There will be enclosed storage of solids onsite.	Will be in place at commencement of operations

BAT 73. 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.	N/A – There will be in silos onsite	No
BAT 74. BAT for sheds is to apply proper designed ventilation and filtering systems and to keep the doors closed. See Section 4.3.4.2.	This is considered in the facility design process.	Will be in place at commencement of operations
BAT 75 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.	This is considered in the facility design process. Will be developed in accordance to "BAT Guidance Notes for the Waste Sector: Waste Transfer and Materials Recovery" (EPA, 2011) ensuring the correct control and management techniques are in place.	Will be in place at commencement of operations
BAT 76. 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.	N/A	No
5.3.4 Preventing incidents and (major) accidents		
BAT 77. BAT in preventing incidents and accidents is applying a safety management system as described in Section 4.1.7.1.	This is in accordance to Thorntons Health and Safety documents and procedures. All Thorntons Recycling licenced and permitted facilities have achieved and maintained the OHSAS 18001 standard since 2009. This installation will also seek to achieve and maintain these standards.	Will be in place at commencement of operations
5.4 Transfer and handling of solids **5.4.1 General approaches to minimise dust from transfer and handling**		
BAT 78. 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.	The loading and unloading of material will all be contained indoor at the proposed facility.	Will be in place at commencement of operations
BAT 79. 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.	This is considered in the design process when loading the Solid Refuse Fuel.	Will be in place at commencement of operations
BAT 80. 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.	There will be a speed limit in place at the proposed facility.	Will be in place at commencement of operations
BAT 81. 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	The surfaces at the proposed facility will be concrete to ensure easily cleaning preventing dust	Will be in place at commencement of operations

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.	being swirled up be vehicles.	
BAT 82. BAT is to clean roads that are fitted with hard surfaces according to Section 4.4.6.12.	To be contained within the EMS for the installation and the Health and Safety, and maintenance procedures which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001 and OHSAS 18001 accreditation.	Will be in place at commencement of operations
BAT 83. 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.	To be contained within the EMS for the installation and the Health and Safety, and maintenance procedures which will be produced prior to operation and will be developed in accordance with Thorntons Recycling existing ISO14001 and OHSAS 18001 accreditation.	Will be in place at commencement of operations
BAT 84. 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.	N/A	No
BAT 85. 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 • applying a cascade (e.g. cascade tube or hopper) • applying a minimum slope angle with, e.g. chutes.	This is considered at the facility design process with the loading of the Solid Refuse Fuel as a walking floor is proposed for the loader to load the material.	Will be in place at commencement of operations
BAT 86. 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.	This is considered at the facility design process with the Solid Refuse Fuel plant design.	Will be in place at commencement of operations

5.4.2 Considerations on transfer techniques		
BAT 87. For applying a grab, BAT is to follow the decision diagram as shown in Section 4.4.3.2 and to leave the grab in the hopper for a sufficient time after the material discharge.	This is considered at the facility design process	Will be in place at commencement of operations
BAT 88. BAT for new grabs, is to apply grabs with the following properties (see Section 4.4.5.1): • geometric shape and optimal load capacity • the grab volume is always higher than the volume that is given by the grab curve • the surface is smooth to avoid material adhering, and • a good closure capacity during permanent operation.	This is considered at the facility design process	Will be in place at commencement of operations
BAT 89. 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.	This is considered at the facility design process	Will be in place at commencement of operations
BAT 90. 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.	N/A	No
BAT 91. 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.	N/A	No
BAT 92. For existing conventional conveyors, 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.	N/A	No

BAT 93. 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.	This is considered at the facility design process.	Will be in place at commencement of operations

7. ATTACHMENT F – ELRA, CLOSURE PLAN AND FINANCIAL PROVISION

- *Update the ELRA and closure plan to include;*
  - *The potential actions and costs required to return the installation to its baseline status.*
  - *The cost for removal of the maximum waste storage capacity of each designated storage area to ensure a worst-case scenario has been considered.*

Please note revised draft ELRA and Closure Plan include in Appendices 7 & 8 respectively.