Attachment-4-8-2-Screening-for-Baseline-Assessment

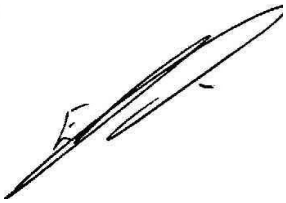
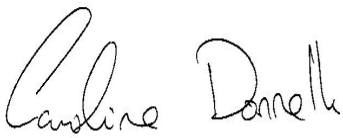
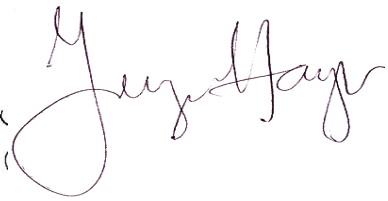
Sub Section 4.8
Application ID LA003577

Dublin Waste to Energy Limited

Project reference: PR-351653
Project number: 60587300

21 March 2019

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Brendan McCarthy Environmental Scientist	Edel O'Hannelly, Principal Hydrogeologist	Caroline Donnelly, Associate Director	Fergus Hayes, Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	20th February 2019	Draft for site	Yes	CD	Associate Director
1	07th March 2019	Revised draft for site	Yes	CD	Associate Director
3	21st March 2019	Final	Yes	FH	Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name
0	1	DWtE

Prepared for:

Dublin Waste to Energy Limited

Prepared by:

Brendan McCarthy
Environmental Scientist
T: 021 4365006
M: 087 1872998
E: brendan.mccarthy@aecom.com

AECOM Ireland Limited
4th Floor
Adelphi Plaza
Georges Street Upper
Dun Laoghaire
Co. Dublin A96 T927
Ireland

T: +353 1 238 3100
aecom.com

Table of Contents

1. Introduction 1
1.1 Project Background 1
1.2 Baseline Assessment 1
1.3 Project Objective 1
1.4 Scope of Work 1
2. Identification of Hazardous Substances (Stage 1) 2
3. Identification of Relevant Hazardous Substances (Stage 2) 3
4. Assessment of Site-Specific Pollution Possibility (Stage 3) 3
4.1 Ammonia Solution 4
4.2 Diesel 4
4.3 Sodium Hypochlorite 5
5. Conclusion 6
Appendix A Stage 1 and 2 Screening Tables 7

Appendix A Relevant Hazardous Substances Tables

Table 1 Relevant Hazardous Substances (Stage 1 and 2)
Table 2 Relevant Hazardous Substances (Stage 3)

1. Introduction

1.1 Project Background

Dublin Waste to Energy Ltd. (DWtE) operate a site located on the Poolbeg Peninsula, Ringsend, Dublin (the site) under Industrial Emissions Licence (IEL) W0232-01 granted by the Environmental Protection Agency (EPA). A proposed increase in the permitted maximum annual quantity of waste accepted at the facility from 600,000 tonnes per annum to 690,000 tonnes per annum (15% increase) has obliged the site to apply to the EPA for a review to the site IEL. As part of the IEL review application, DWtE must identify if a baseline report is required. DWtE appointed AECOM Ireland Limited (AECOM) to assist in the preparation of their IEL review application including the production of this Baseline Assessment.

The site location map and site layouts used to support the IEL application are presented in **Drawing 001** and **Drawing 002** of this IEL review application**.**

Details on DWtE activities and supporting infrastructure are presented in Attachment 4.8.1: Operational Report that supports the IEL application.

1.2 Baseline Assessment

When the European Union Directive on Industrial Emissions[1] came into force, it became necessary for licensees to prepare a baseline report with regard to soil and groundwater contamination when activity on the site involves the use, production or release of relevant hazardous substances, under either of the following scenarios:

- When applying for an IEL to operate a new installation; and,
- When revising the permit for an existing licensed installation.

Under the Industrial Emissions Directive, a *Relevant Hazardous Substance* is a raw material, product, intermediary, by-product, emission or waste which, as a result of hazardousness, mobility, persistence and biodegradability (as well as other characteristics), is capable of contaminating soil or groundwater.

1.3 Project Objective

The main objective of this report is to investigate if a baseline assessment is required for the site in support of the current licence amendment application and related to activities on site requiring an IEL.

1.4 Scope of Work

The aim of baseline assessment is to generate a report which, on cessation of the licensed activity, will allow for direct comparison to determine if contamination has been added in the course of the licensed activity since the baseline was established. Therefore, the baseline report needs to be as comprehensive as possible.

The Official Journal of the European Union has issued guidance[2] on the stages to be completed and the scope of content for baseline reports. In total there are eight stages to be completed, as listed below:

- Stage 1 – Identification of hazardous substances used;
- Stage 2 – Identification of relevant hazardous substances used;

[1] Industrial Emissions Directive, Directive 2010/75/EU
[2] European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (2014)

- Stage 3 – Assessment of the site-specific pollution possibility;
- Stage 4 – Site history;
- Stage 5 – Environmental setting;
- Stage 6 – Site characterisation;
- Stage 7 – Site investigation; and,
- Stage 8 – Production of the baseline report.

The guidance states that:

> *Where during stages 1-3 it is demonstrated on the basis of the available information that a baseline report is not required, there is no need to progress to the later stages. A record of such a demonstration should be made and held by the competent authority, including the reasons for such a decision.*

2. Identification of Hazardous Substances (Stage 1)

The first stage in preparing a baseline assessment is to identify every hazardous substance that is used, produced or released at the site.

Substances were classified as hazardous if:

- They were identified as 'Hazardous' by the EPA in the document *Classification of Hazardous and Non- Hazardous Substances in Groundwater* (2010)[3]; or,
- If they have a relevant hazard statement on the European Chemicals Agency website[4]. A total of 13 relevant environmental hazard statements have been identified:
  - H340 – May cause genetic defects
  - H341 – Suspected of causing genetic defects
  - H350 – May cause cancer
  - H351 – Suspected of causing cancer
  - H360D – May damage unborn child
  - H360F – May damage fertility
  - H400 – Very toxic to aquatic life
  - H401 – Toxic to aquatic life
  - H402 – Harmful to aquatic life
  - H410 – Very toxic to aquatic life with long lasting effects
  - H411 – Toxic to aquatic life with long lasting effects
  - H412 – Harmful to aquatic life with long lasting effects
  - H413 – May cause long lasting harmful effects to aquatic life

A list of the hazardous substances identified in Stage 1 are listed in **Appendix A**, Table 1.

[3] http://www.epa.ie/pubs/reports/water/ground/classificationofhazardousandnon-hazardoussubstancesingroundwater.html
[4] http://echa.europa.eu/

3. Identification of Relevant Hazardous Substances (Stage 2)

Stage 2 screens the hazardous substances identified following Stage 1 for potential pollution risk due to their chemical or physical properties.

This risk-based assessment screens the list of substances given in Appendix A Table 1 in consideration of:

- The physical state of substances that are used and stored on site, e.g. solids and gases can be removed from the list as part of the screening process as their physical state means that are unlikely to result in contamination; and,
- The overall quantity used on site. The EU Guidance states that:

> *where very small quantities are used, produced or released on the site of the installation then the possibility of contamination is likely to be insignificant for the purpose of producing a baseline report.*

An annual usage of >250 L (or >250 kg) was the threshold above which substances used on site were considered in this assessment. Those substances that are used/stored in small quantities on site have not been considered, for example substances used in laboratories or in the canteen.

Three relevant hazardous substances were identified following Stage 2 screening:

- Ammonia solution;
- Diesel; and
- Sodium Hypochlorite.

4. Assessment of Site-Specific Pollution Possibility (Stage 3)

In Stage 3, the hazardous substances taken forward from Stage 2 were considered in the context of the site to determine whether circumstances exist which may result in the release of a substance in sufficient quantities to pose a pollution risk. Specific issues include:

- The quantity of each hazardous substance or groups of similar hazardous substances;
- How and where hazardous substances are stored and used on site;
- How the hazardous substances are transported around the installation; and,
- In case of existing installations, the measures that have been adopted to ensure that it is impossible in practice for contamination of soil or groundwater to take place (including the presence and integrity of containment mechanisms, condition of site drainage etc.).

For the list of three on-site relevant hazardous substances which were not screened out in Stage 2, AECOM assessed the storage arrangement of each substance together with handling procedures.

At DWtE, the storage and handling of process materials are undertaken in accordance with the EPA Guidance Document *IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities*, EPA 2004[5]. Details on the site containment systems were obtained from the *Major Accident Hazard Assessment* prepared by Elsam[6] and the site's emergency response procedures[7]. Brief

[5] http://www.epa.ie/pubs/advice/licensee/guidancetostorageandtransferofmaterialsforscheduledactivities.html
[6] Elsam (2006) Major Accident Hazard Assessment
[7] DWTE (2018) Emergency Response Procedure for the Dublin Waste to Energy Facility

details of the storage arrangements for the relevant hazardous substances and associated containment measures on site are provided in Appendix A Table 2.

Based on the information provided by DWtE to AECOM, it is expected that, as a result of site storage facilities, containment and handling practices, the likelihood of possible contamination of soils and groundwater from the relevant hazardous substances on site is very low.

4.1 Ammonia Solution

Ammonia solution is a liquid at room temperature and has the potential to contaminate soil and/or groundwater if lost to ground. At the DWtE facility ammonia solution is injected into the boiler to reduce the nitrogen dioxide and nitric oxide (together known as NOx) in the flue gas through selective non-catalytic reduction. Ammonia solution is stored in an above ground storage tank (AST) with a capacity of 60,000 L, which is located in the Product Storage Area within the main process building.

The following ammonia spill mitigation measures have been implemented:

1. The ammonia solution tank is double skinned providing secondary containment and fitted with leak detection systems which alarms to the site control room.
2. In the event of a loss of tank containment, the isolated main process building drainage system will act as local tertiary containment.
3. The ammonia solution tank has been designed to the appropriate engineering standards for ammonia solution storage.
4. In the event of a highly unlikely catastrophic failure of a road tanker delivering ammonia the ammonia solution will drain to the site attenuation tank. An overflow valve to the sewage system will be shut-off following activation of the site alarm or by sensors in the attenuation tank preventing ammonia solution from entering the sewerage system.
5. Water in the attenuation tank will remain in situ until monitoring results dictate the correct disposal route.
6. The ammonia solution tank, delivery system and supply pipework have all been placed on a rigorous preventative maintenance system. In addition, there are regular visual inspections undertaken of the ammonia solution storage tanks.
7. Ammonia solution supply to the site is undertaken in accordance with strict DWtE procedures.

Given the above design and operational mitigation measures and the DWtE documented procedures on material use and storage, the risk of ammonia solution entering soil and/or groundwater is considered very low.

4.2 Diesel

Diesel is a liquid at room temperature and has the potential to contaminate soil and/or groundwater if lost to ground. Diesel is stored in a bunded 100,000 L capacity tank in the Product Storage Area within the main process building. The diesel tank is located below ground level in a concrete bund arrangement.

The following diesel spill mitigation measures have been implemented:

1. The diesel tank is located within a bund providing secondary containment, which is integrity, tested on a five-year cycle. The bund has been designed for a minimum 110% capacity of the diesel tank volume.
2. A leak detection system installed in the diesel bund will alert site operators in the event of a loss of containment. An overfill protection alarm has been fitted to the diesel tank.
3. The diesel tank and bund have been designed to the appropriate engineering standards for diesel storage.
4. The diesel loading point and the points of use (auxiliary burner system and the emergency generators) are bunded with both secondary and tertiary containment.

5. The double-contained above ground diesel supply piping to the generators has been designed to minimise flange connections and has been constructed of high quality, pressure rated non-metal material.
6. In the event of a highly unlikely catastrophic failure of a road tanker outside of the bund in the main process building, diesel will enter the surface water drainage system where it will be contained by two 10,000 L Class 1 hydrocarbon interceptors.
7. Should the interceptor fail or be overcome in the event of a diesel spill (highly unlikely), or should there be a fire in the area, the contaminated liquid will drain to the attenuation tank. An overflow valve to the sewage system will be shut-off following activation of the site alarm or by sensors in the attenuation tank preventing diesel from entering the sewerage system.
8. Water in the attenuation tank will remain in situ until monitoring results dictate the correct disposal route.
9. The diesel tank, delivery system, supply pipework and the generators have all been placed on a rigorous preventative maintenance system. In addition, there are regular visual inspections undertaken of diesel storage.
10. Diesel supply to the site is undertaken in accordance with strict DWtE procedures.

Given the above design and operational mitigation measures and the DWtE have documented procedures on material use and storage, the risk of diesel entering soil and/or groundwater is considered very low.

4.3 Sodium Hypochlorite

Sodium hypochlorite is a liquid at ambient temperature and stored in a bunded 45,000 L capacity AST located in the Product Storage Area. Sodium hypochlorite is used on site as a biocide to treat cooling water. A dosing pump is used to treat the cooling water.

The following sodium hypochlorite spill mitigation measures have been implemented:

1. The sodium hypochlorite tank is double skinned providing secondary containment, which is integrity tested on a five-year cycle.
2. In the event of a loss of containment and bund failure, the sodium hypochlorite will enter the surface water drainage system and will drain to the attenuation pond, which will act as local tertiary containment.
3. The sodium hypochlorite tank has been designed and certified to the appropriate engineering standards for sodium hypochlorite storage.
4. An overflow valve to the sewage system will be shut-off following activation of the site alarm or by sensors in the attenuation tank preventing sodium hypochlorite from entering the sewerage system.
5. Water in the attenuation tank will remain in situ until monitoring results dictate the correct disposal route.
6. A sodium hypochlorite dosing plan is submitted to the EPA for review as part of the EMP.
7. The sodium hypochlorite tank, delivery system, supply pipework and the dosing pumps have all been placed on a rigorous preventative maintenance system.
8. Sodium hypochlorite supply to the site is undertaken in accordance with strict DWtE procedures.

Due to the provision of secondary and tertiary containment the risk of sodium hypochlorite entering soil and/or groundwater is considered very low and has been screened out as a Relevant Hazardous Substance.

5. Conclusion

As all of the hazardous substances identified in Stages 1 and 2 were screened out in Stage 3 as a result of the appropriately engineered on-site storage facilities and rigorous handling procedures, a baseline report is not required.

Appendix A Stage 1 and 2 Screening Tables

Material / Substance	Constituent	CAS Number	Stage 1				Stage 2			
			EPA Classification	Relevant Hazard Statement	Hazardous Substance	Quantity >250 L / 250 kg	Physical State Stored On-Site	Amount Stored (approximate)	Unit	Considered a Relevant Hazardous Substance
Ammonia solution (25%)		7664-41-7	Non-Hazardous	H400	Yes	Yes	Liquid	60,000	L	Yes - Relevant Hazard Statement (H400)
Diesel		68334-30-5	Hazardous	H411	Yes	Yes	Liquid	100,000	L	Yes - Relevant Hazard Statement (H411)
Sodium Hypochlorite		7681-52-9	Non-Hazardous	H400	Yes	No	Liquid	45,000	L	Yes - Relevant Hazard Statement (H400)
FGT-residues, ash and boiler ash		Mixture	-	-	Yes	Yes	Solid	700,000	kg	No - Material is a solid
	Lead di(acetate)	301-04-2	-	H360F, H400, H410						
P-Metalaminophenol Sulfate REAGENT		55-55-0	-	H400, H410	Yes	No	Solid	<250	kg	No - Material is a solid
Ammonia Molybdate		12054-85-2	-	H402	Yes	No	Solid	<250	kg	No - Material is a solid
Shell Gadus S2 V100 2		Mixture		-	Yes	No	Solid	<250	kg	No - Material is a solid
	zinc namptenate	12001-85-3	-	H400, H410						
	triazole derivative	91273-04-0	-	H410						
Shell Gadus S2 V100 3		Mixture		-	Yes	No	Solid	<250	kg	No - Material is a solid
	zinc namptenate	12001-85-3	-	H400, H410						
Shell Gadus S2 V3 V220C 2		Mixture			Yes	No	Solid	<250	kg	No - Material is a solid
	Zinc naphthenate	12001-85-3	-	H400, H410						
CAT® DEO-ULS 10W-30 (20 L)		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	tetrapropenyl phenol	121158-58-5	-	H60F, H400, H410						
	zinc alkyl dithiophophate	113706-15-3	-	H401, H411						
CAT® TDTO 30		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	tetrapropenyl phenol	121158-58-5	-	H60F, H400, H410						
	zinc alkyl dithiophophate	113706-15-3	-	H401, H411						
CAT® HYDO ADVANCED 10		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
ates, heavy C18-50 - Branched, cyclic and l		848301-69-9	-	H400, H410						
	zinc alkyldithiophospha	68649-42-3	-	H401, H411						
SIMALUBE 24		Mixture		H412	Yes	No	Solid	<250	kg	No - Material is a solid
LOCTITE 3450 TWIN SYRINGE HYSOL		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	bisphenol-A-(epichlorhyd	500-033-5	-	H411						
CHESTERTON 785 PARTING LUBE		Mixture			Yes	No	Solid	<250	kg	No - Material is a solid
stilates (petroleum), hydrotreated light naph		64742-47-8	-	H411						
		64742-49-0	-	H411						
GLEITIMO 165 ANTI SEIZE		Mixture			Yes	No	Solid	<250	kg	No - Material is a solid
'heptadecenyl)-2-oxazoline-4,4-dimethanol		28984-69-2	-	H412						
	Nickel	7440-02-0	Non-Hazardous	H351, H412						
DENIOS BIO X		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	Orange terpene	8028-48-6	-	H411, H410						
WELD ON 725 WET 'R DRY		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	tetrahydrofuran	109-99-9	-	H351						
WELD ON P-70 PRIMER		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	tetrahydrofuran	109-99-9	-	H351						
WELD ON 719 PVC-U		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	tetrahydrofuran	109-99-9	-	H351						
SIKA SIKADUR -330		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	bisphenol-A-(epichlorhydrin) epoxy resin	25068-38-6	-	H411						
	Naphthalene	91-20-3	Hazardous	H351, H410						
RAID FLY & WASP KILLER		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	Naphtha (petroleum), hydrotreated heavy	64742-48-9	-	H350						
	1R-trans phenothrin	26046-85-5	-	H400, H410						
	prallethrin	23031-36-9	-	H410						
Specialised Aerosols Zinc-Rich		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	Xylene	1330-20-7	Hazardous	-						
	Zinc Powder	7440-66-6	Non-Hazardous	H410						
Specialised Aerosols Wire Rope Spray		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	(Low Boiling Point Hydrogen Treated	64742-49-0	-	H340, H350						
	Baseoil-Unspecified	64742-52-5	-	H350						
Rocol Dry Moly		Mixture			Yes	No	Solid	<250	kg	No - Material is a solid
	Hydrocarbon Aerosol Propellant	68476-85-7	-	H340, H350						
	(Low Boiling Point Hydrogen Treated	64742-49-0	-	H340, H350						
	Xylene	1330-20-7	Hazardous	-						
Hansil Silicone		Mixture			Yes	No	Solid	<250	kg	No - Material is a solid
	Middle Petroleum Distillates	265-184-2								
	Light Aliphatic Hydrocarbon	4742-47-8								
Hycote Spray Paint		Mixture			Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
	Xylene	1330-20-7	Hazardous	-						

Appendix A Table 2 - Stage 3

Material / Substance	Stage 3				
	Storage Location	**Transportation Method**	**Containment Measures**	**Likelihood of Release to Open Ground**	**To be Monitored - Rationale**
Ammonia solution (25%)	Double skinned 60,000 L above ground storage tanks located in the main process building	Stored local to use All pipework and points of use located within bund Refilled by road tanker	Tank and all flanges and valves located in bunds The main process building's isolated drainage system provides tertiary containment Tanks refilled by tanker within tertiary bund In the event of a spill outside of the building, ammonia solution will enter the surface water drainage system where it will be contained within the attenuation tank Water in the attenuation tank is retained on site for reuse, excess water is transferred to the sewage system following testing to ensure it is within IEL parameters Connection to the sewerage system can is also closed if the alarm is activated	Highly Unlikely	**No** adequately bunded, with local secondary and tertiary containment and suitable procedures in the event of a large scale loss
Diesel	Bunded 100,000 L storage tank located in the main process building	Stored local to use All pipework and points of use located within bund Refilled by road tanker	Tank and all flanges and valves located in bunds The bunds are checked visually daily and integrity tested every five years Tanks refilled by tanker within bunded area Fill protection alarms fitted to diesel tank. Leak protection systems located in diesel bund In the event of a spill outside of the building, diesel will enter the surface water drainage system where it will be contained by a Class 1 oil-water separator, if the separator fails it will be contained within the attenuation tank Water in the attenuation tank is retained on site for reuse, excess water is transferred to the sewage system following testing to ensure it is within IEL parameters Connection to the sewerage system can is also closed if the alarm is activated	Highly Unlikely	**No** adequately bunded, with local containment and a leak detection system. Suitable procedures in the event of a large scale loss
Sodium Hypochlorite	Bunded 45,000 L above ground storage tank	Stored local to use Transfer to point of use through above ground pipework Refilled by road tanker	Tank and all flanges and valves located in bunds The bunds are checked visually daily and integrity tested every five years Sodium hypochlorite lost from the tank and bund will enter the surface water drainage system where it will be contained by the attenuation tank providing tertiary containment Water in the attenuation tank is retained on site for reuse, excess water is transferred to the sewage system following testing to ensure it is within IEL parameters Connection to the sewerage system can is also closed if the alarm is activated	Highly Unlikely	**No** adequately bunded, with local secondary and tertiary containment and suitable procedures in the event of a large scale loss

aecom.com