ENVIRONMENTAL RISK ASSESSMENT

Increased Tonnage Permit Variation Application

Prepared for: enfinium Parc Adfer Operations Limited

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1.0 INTRODUCTION

SLR Consulting Limited (SLR) has been instructed by enfinium Parc Adfer Operations Limited (PAOL) to prepare an application for a substantial variation of the bespoke Environmental Permit (EP) (EPR/AB3092CV) for the Parc Adfer Energy Recovery Facility, Deeside Industrial Park, Flintshire, CH5 2LL, for submission to Natural Resources Wales (NRW).

The PAOL installation is currently permitted for the incineration of waste to generate energy. The installation is a Part A(1) activity as described in the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended).

The EP variation application does not alter any of the above activities carried out on site but increases the maximum annual tonnage of waste that can be processed on site.

This Environmental Risk Assessment (ERA) is a simple assessment of the risks to the environment and human health that may be associated with the increase annual throughput of the ERF Installation.

1.1 Methodology

This ERA is an assessment of the risk to the environment and to human health that may be associated with the proposed variation at the site.

The assessment has been completed in accordance with the Environment Agency (EA) Technical Guidance 'Risk Assessments for your Environmental Permit' dated April 2022. The aim of the assessment is to identify any significant risks and to demonstrate that the risk of pollution or harm will be acceptable by taking the appropriate measures to manage these risks.

This ERA uses the following approach for identifying and assessing the risks from the proposed variation to the existing permitted operations:

Step 1 Identify and consider risks for your site and the sources of the risks.

Step 2 Identify the receptors at risk from your site.

Step 3 Identify the possible pathways from the sources of the risks to the receptors.

Step 4 Assess risks relevant to your specific activity and check they are acceptable and can be screened out.

Step 5 State what you will do to control the risks if they are too high.

Step 6 Submit your risk assessment as part of your EP application.

Section 2.0 of this document is a screening step to identify the receptors at risk as part of this assessment.

Section 3.0 identifies people or parts of the environment that could be harmed (at potentially significant risk) by the activity.

The guidance[1] requires all receptors that are near the site and could reasonably be affected by the proposed activities to be identified and considered as part of the ERA. Therefore, for the purpose of this report:

- A 2km radius from the site's EP boundary has been adopted in reviewing potentially sensitive receptors designated as RAMSAR, SAC, SPA, Marine Potential SPA and SSSIs and sensitive receptors of ecological importance along with features such as sites of cultural and natural heritage; and

[1] https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit accessed April 2022

- A radius of 500m from the site's EP boundary has been adopted for all other potentially sensitive local receptors (for example, residential, commercial, industrial, agricultural and surface water receptors).

Section 4.0 of this document presents the assessment and demonstrates that any risks of pollution or harm will be mitigated to manage the risk.

This ERA should be read in conjunction with the following documents submitted with this EP application:

- Application Forms
  - Part A, C2, C3 and F1
- Non-Technical Summary (SLR Ref. 410.11035.00011_NTS)
- Air Emissions Risk Assessment (SLR Ref. 410.11035.00011_AERA)
- Best Available Techniques and Operating Techniques document (SLR Ref. 410.11035.00011_BATOT)
- Drawings
  - 01 Site Location (SLR Ref. 410.11035.00011 Drawing 001)
  - 02 Site Layout & Environmental Permit Boundary (SLR Ref. 410.11035.00011 Drawing 002)
  - 03 Local Receptors (SLR Ref. 410.11035.00011 Drawing 003)
  - 04 Cultural and Natural Heritage (SLR Ref. 410.11035.00011 Drawing 004)

2.0 IDENTIFYING THE RISKS

Step 1 is a screening step to identify potential risks to the environment from the proposed permit variation. The following are generally considered to require assessment for an Installations:

- Any discharge;
- Accidents;
- Odour;
- Noise and vibration;
- Uncontrolled or unintended emissions; and
- Visible emissions.

Based on the proposed variation to the Installation, there will be no point source emissions to groundwater or land and therefore, for the purpose of this ERA these elements have not been considered.

The generation of fugitive emissions (dust, pests and litter), environmental accidents and odour have resulting from the proposed variation have been considered within the ERA.

Point source emissions to air have been considered in the Air Emissions Risk Assessment which forms Section 6 of the permit variation application (document reference 410.11035.00011_AERA).

A Best Available Techniques and Operating Techniques has also been included in the application, to address best available techniques to minimise the impacts on the environment (document reference 410.11035.00011_BATOT).

3.0 SITE SETTING AND RECEPTORS

Step 2 identifies people or parts of the environment that could be harmed (at potentially significant risk) by the activity. This section identifies the site setting and potentially sensitive receptors in the vicinity of the site.

3.1 Site Setting

The site is centred on National Grid Reference SJ 310 716. The site is surrounded by industrial land, being located within the Deeside Industrial Estate. Areas of open space lie approximately 50m to the north of the site. There are no residential properties within 500m of the site; the closest residential receptors are associated with Puddington to the north of the site. The Borderland railway line lies adjacent to the east of the site.

The site location is illustrated on Drawing 001. The site layout and EP boundary is shown on Drawing 002, local receptors are illustrated on Drawing 003, and Drawing 004 shows the Cultural and Natural Heritage.

A summary of the immediate surrounding land use is provided in Table 1.

Table 1
Immediate Land Uses Surrounding the Site

Direction	Land-Use
North	Commercial/industrial units, the Weighbridge Road (A548), railway line, open space/farmland, several bodies of surface water and Shotwick Lake Sailing recreational area.
East	The Borderland railway line lies adjacent, beyond which lies a ditch, commercial and industrial units, and a solar park.
South	Commercial and industrial units and ditches.
West	Weighbridge Road lies to the west, beyond which lies commercial and industrial units, a disused railway line and surface water bodies.

3.1.1 Commercial and Industrial

The site is located within the Deeside Industrial Estate, with commercial and industrial units to the east, south and west, including the Great Bear Distribution Deeside and Amazon XLP1 approximately 100m to the east, Flintshire Bridge HVDC Convertor Station lies approximately 335m to the south and Shotton Mill lies 40m to the west. One commercial and industrial unit lies approximately 150m to the northeast beyond the A548.

3.1.2 Local Transport Network

The Borderland railway line lies adjacent to the east. The Weighbridge Road lies adjacent to the west and approximately 100m north of the EP boundary.

A disused railway line lies approximately 100m west and 125m north of the site boundary.

3.1.3 Recreational

Shotwick Lake Sailing club is located approximately 360m northeast of the EP boundary.

3.1.4 Surface Water Features

A review of Multi Agency Geographical Information for the Countryside[2] (MAGIC) map reveals that there are several surface water features, including reservoirs and ditches within 500m of the EP boundary. The closest ditch lies approximately 50m east, with several ditches situated approximately 170m north beyond the Weighbridge Road. Two reservoirs lie approximately 170m north, a pond lies approximately 340m northwest and the Shotwick Lake approximately 410m northeast of the EP boundary. Additional ditches lie southwest, the closest of which lies approximately 85m and several bodies of water approximately 240m west of the EP boundary.

3.1.5 Open Space

Areas of open space lie to the north of the site, the closest of which lies approximately 50m north of the EP boundary.

3.1.6 Farmland

A parcel of farmland lies approximately 230m northeast of the EP boundary.

3.1.7 Solar Park

A solar park lies approximately 230m northeast of the EP boundary.

3.2 Geology, Hydrogeology and Hydrology

3.2.1 Geology

A search on the British Geological Survey (BGS)[3] Map identifies the site as having the following strata:

- Superficial Tidal Flat Deposits of clay, silt and sand, formed approximately 2 million years ago in the Quaternary Period in environments previously dominated by shorelines; and
- Bedrock of Kinnerton Sandstone Formation, formed appropriately 247 to 252 million years ago in the Triassic Period in local environment previously dominated by hot desert, with Pennine Lower Coal Measures including mudstone, siltstone and sandstone formed approximately 318 to 319 million years ago in the Carboniferous Period in an environment dominated by swamps, estuaries and deltas present in the southern tip of the site.

3.2.2 Hydrogeology

The MAGIC map identifies the Kinnerton Sandstone Formation bedrock at the site as a Principal Aquifer, which is defined as:

> *"layers of rock or drift deposits that have high intergranular and/or fracture permeability, meaning they usually provide high level of water storage and transmission. They may support water supply and/or river base flow on a strategic scale."*

The Pennine Lower Coal Measures in the southern part of the site is classified as a Secondary A aquifer, which is defined as:

[2] Multi-Agency Geographical Information for the Countryside Map, available at www.magic.defra.gov.uk, accessed in April 2022.
[3] British Geological Survey, available at http://www.bgs.ac.uk, accessed April 2022.

"permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers."

The Superficial Tidal Flat Deposits are defined as a Secondary (undifferentiated) aquifer.

The MAGIC map indicated that the site does not lie within any Source Protection Zones.

3.2.3 Hydrology

Most of the site does not lie within a groundwater vulnerability area. The northern corner of the site lies in a medium – high vulnerability area as indicated on MAGIC map.

Flood Zone

The Development Advice Map[4] identifies that the site lies in flood zone B, 'areas known to have flooded in the past' (Figure 1).

Figure 1 Flood Zones within the Site boundary

3.3 Ecology

[4] Flood map for planning, available at https://naturalresources.wales/flooding/flood-map-for-planning-development-advice-map/?lang=en, accessed April 2022

3.3.1 Internationally Designated Sites

Site of Special Scientific Interest (SSSI)

A review of MAGIC map identified four SSSI's within a 2km radius of the site boundary:

- Dee Estuary / Aber Afon Dyfrdwy, is located 150m north;
- Shotton Lagoons and Reedbeds SSSI lies 800m southwest;
- Inner Marsh Farm SSSI lies approximately 990m north; and
- Afon Dyfrdwy (River Dee) lies approximately 1500m south of the EP boundary.

Special Areas of Conservation

Three Special Areas of Conservation are identified within 2km of the sites EP boundary:

- The Dee Estuary / Aber Dyfrdwy SAC (Wales) lies 150m north;
- The Dee Estuary / Aber Dyfrdwy SAC (England) lies 1500m north; and
- River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC lies 1600m south.

Special Protection Areas

A review of MAGIC map identifies two SPA's which lie within 2km of the EP boundary The Dee Estuary (Wales) SPA lies 150m north and The Dee Estuary (England) lies 1250m north of the EP boundary.

RAMSAR

A review of MAGIC map identifies two RAMSAR's which lie within 2km of the EP boundary The Dee Estuary (Wales) RAMSAR lies 150m north and The Dee Estuary (England) RAMSAR lies 1250m north of the EP boundary.

Marine Special Protection Area

A review of MAGIC map confirms that The Dee Estuary Marine SPA is situated 990m north from the EP boundary.

3.3.2 Nationally/Locally Designated Sites

RSPB Reserves

A review of MAGIC map identified the Dee Estuary RSPB Reserve lies approximately 670m north.

Other Receptors

A review of the Lle A Geo-Portal for Wales (Geo-Portal)[5] confirms that none of the following are situated within a 2km radius of the site boundary:

- Local Nature Reserves;
- Areas of Outstanding Natural Beauty (AONB);
- National Nature Reserves (NNR);
- Ancient Woodland;
- Biosphere Reserves; and
- National Parks.

[5] https://lle.gov.wales/catalogue?t=1&lang=en Accessed April 2022

3.4 Cultural Heritage

Listed Buildings

A review of the Geo-Portal confirms that Hawarden Bridge a Grade II listed building lies 1.9km south of the EP boundary.

MAGIC map identified Barn Farmhouse and Attached Range of Outbuildings a Grade II listed building lies approximately 1.8km northeast of the EP boundary.

Registered Historic Parks & Gardens

A review of the Geo-Portal identified Shotton Steelworks Garden as a Registered Historic Parks and Gardens which lies approximately 1.89km south of the EP boundary.

Additionally, MAGIC map confirmed that Burton Manor lies approximately 1.47km north, of the EP boundary.

Scheduled Monuments

A review of MAGIC map confirmed that Promontory fort on Burton Point 550m southwest of Burton Point Farm lies 1.6km north of the EP boundary.

Other Receptors

A review of the Geo-Portal confirmed that no World Heritage Sites are situated within a 2km radius of the site boundary.

3.5 Identified Receptors

Table 2 and Drawing 003 & 004 identified receptors which are considered to be potentially sensitive and could reasonably be affected by activities at the site.

Table 2
Identified Receptors

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary at closest point (in metres)
Local receptors located within 500m of the EP boundary as shown on Drawing 003			
Borderland railway line	Local Transport Network	East	Adjacent
Weighbridge Road (A548)	Local Transport Network	West/north	Adjacent/100
Shotton Mill	Industrial	West	40
Open Space	Open Space	North	50
Ditch	Surface Water Feature	East	50
Ditch	Surface Water Feature	Southwest	85
Amazon XLP1	Commercial	East	100
Great Bear Distribution Deeside	Commercial	East	100
Disused railway	Local Transport Network	West/north	100/125
Unnamed	Commercial/Industrial	Northeast	150
Ditch	Surface Water Feature	North	170
Reservoirs	Surface Water Feature	North	170
Solar Park	Solar Park	Northeast	230
Farmland	Farmland	Northeast	235
Water Bodies	Surface Water Feature	West	240

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary at closest point (in metres)
Flintshire Brigade HVDC Convertor Station	Commercial/Industrial	South	335
Pond	Surface Water Feature	Northwest	340
Shotwick Lake Sailing club	Recreational	Northeast	360
Shotwick Lake	Surface Water Feature	North	410
Internationally Designated, Nationally/Locally Designated Ecological Receptors located within 2km of the EP boundary as shown on Drawing 004			
Dee Estuary / Aber Afon Dyfrdwy (River Dee)	Site of Special Scientific Interest	North	150
The Dee Estuary / Aber Dyfrdwy (Wales)	Special Areas of Conservation	North	150
The Dee Estuary (Wales)	Special Protection Area/RAMSAR	North	150
Dee Estuary	RSPB Reserve	North	670
Shotton Lagoons and Reedbeds	Site of Special Scientific Interest	Southwest	800
Inner Marsh Farm	Site of Special Scientific Interest	North	990
The Dee Estuary	Marine Special Protection Area	North	990
The Dee Estuary (England)	Special Protection Areas/RAMSAR	North	1250
Burton Manor	Registered Parks & Gardens	North	1475
Afon Dyfrdwy (River Dee)	Site of Special Scientific Interest	South	1500
The Dee Estuary / Aber Dyfrdwy (England)	Special Areas of Conservation	North	1500
Promontory fort on Burton Point 550m southwest of Burton Point Farm	Scheduled Monument	North	1600
River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid	Special Areas of Conservation	South	1600
Barn Farmhouse and Attached Range of Outbuildings	Listed Building	Northeast	1800
Shotton Steelworks Garden	Registered Historic Parks and Gardens	South	1890
Hawarden Bridge	Listed Building	South	1900

3.6 Windrose

Figure 2 shows the wind patterns between 2018-2022 as identified by Hawarden Meteorological Station. The most prominent wind directions are from the northwest and southeast. Winds from the north, north-east, east, and west are relatively infrequent by comparison.

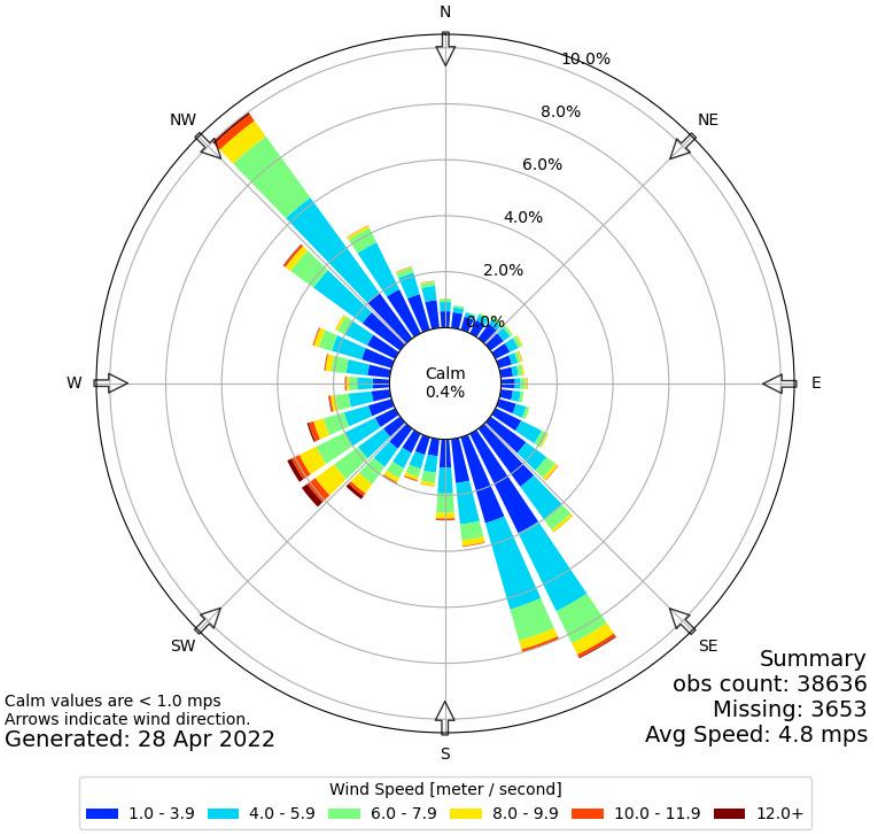

Figure 2
Hawarden Meteorological Station Windrose (2018-2022)

4.0 ENVIRONMENTAL RISK ASSESSMENT

The following table sets out the potential hazards posed by the proposed permit increase throughput, receptors and pathways, along with management and assessment of the identified risks. As defined in Section 2, this assessment only considers risks to amenity (discharge, uncontrolled or unintended emissions (fugitive), odour and accidents) and as a consequence of accidents.

The probability of exposure is the likelihood of the receptors being exposed to the hazard, and is defined as low, medium or high. These terms are qualified as follows:

- Low: exposure is unlikely, barriers in place to mitigate against exposure.
- Medium: exposure is fairly probable, barriers to exposure less controllable.
- High: exposure is probable, direct exposure likely with few barriers.

The methodology outlined in Section 1.1 of this report is the basis on which it is determined whether the proposed operations will lead to significant impacts on the surrounding environment. Where a conclusion of 'not significant' has been reached, it is proposed that the mitigation and management measures that will be in place at the site will be sufficient to ensure that there will be no impact at the surrounding environment

Table 3 Fugitive Emissions Risk Assessment and Management Plan

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
To Air:						
Dust from vehicle movement	Commercial and industrial, local transport network, recreational areas and surface water, as identified in Table 2. See Drawing 004.	Air	The following measures are used to prevent mobilisation of dust generally at the site: • Good housekeeping, including the periodic road sweeping of roads and hard surfaced areas including access roads; • Water bowsers are used if appropriate; • Speed limits are implemented; and	Low – with the mitigation measures implemented on site.	Nuisance and health risk to human receptors.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			• All vehicle movements are on hard standing. Visual inspections are carried out daily and in response to complaints.			
Dust from the operation of the plant and machinery and the incineration process.	Commercial and industrial, local transport network, recreational areas, and surface water, as identified in Table 2.	Air	The buildings design is based on the principle of containment, extraction and treatment in order to prevent fugitive dust emissions. Material imported or exported from the site are transported in enclosed vehicles. Vehicles importing waste not fully enclosed are sheeted or netted. Waste is immediately unloaded directly into the waste bunker inside the waste reception building, reducing the need for secondary movement of waste. All storage and handling of Air Pollution Control (APC) materials, both raw and used, are undertaken within the	Low – with the operational procedures and mitigation measures implemented on site.	Nuisance and health risk to human receptors.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
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What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			building in enclosed/sealed vessels and silos and transported from site in enclosed tankers. The bottom ash from the incineration process is quenched and directed by covered conveyor to the bottom as storage facility prior to export.			
Accumulation of flue gas	Commercial and industrial, local transport network and recreational areas as identified in Table 2. Site personnel See Drawing 003 & 004	Air	The site operates a permit to work system to ensure entry into confined spaces is controlled and appropriate inspections, monitoring and other safety measures as appropriate are carried out prior to entry into enclosed spaces. Employees are trained on the risk associated with working alongside biogas. The Plant Manager will be responsible for implementing risk management	Low – with the preventative measures implement on site.	Human health and ecological impacts. Explosion. Asphyxiation / toxicity. Global warming impacts.	**Not Significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			measures in conjunction with the Best Available Techniques and Operating Techniques (Ref: 410.11035.00011_BATOT).			
Waste charging failure	Commercial and industrial, local transport network, controlled water and recreational areas as identified in Table 2.	Air	The site utilises an automatic system to prevent waste feed at start-up, to maintain the combustion chamber at 850ºc to prevent exceedance of emission limit. Charging operation is as airtight as possible and control of the induction fan in relation to pressure within the furnace during charging, to avoid the escape of fumes and excess air flow. Mass throughput rates will be adjusted to ensure optimum conditions are maintained for combustion and wastes are retained within the chamber to ensure sufficient residence.	Low – with the preventative measures implement on site.	Contaminated land, air pollution and harm to human health.	**Not significant**

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What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			A planned preventative maintenance programme is implemented on site. Waste is checked to ensure suitability for treatment and removal of unsuitable wastes such as oversized materials.			
Flue Gas Treatment System Failure	Commercial and industrial, local transport network, controlled water and recreational areas as identified in Table 2.	Air	A low-level reagent alarms are fitted to the reagent storage silos. A programme of preventative maintenance is employed. The system has suitable redundancy in the event of a failure. Filter bags are cleaned by pulses of compressed air to prevent blockage.	Low – with the preventative measures implement on site.	Contaminated land, air pollution and harm to human health.	**Not significant**

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To Water:						
Runoff from site surfaces	Potentially sensitive receptors including controlled water, commercial and industrial, local transport network, and recreational areas as identified in Table 2.	Land, surface and ground water	Raw and waste materials associated with the ERF is stored in suitable containers and where required provided with adequate secondary containment. Where possible rainfall runoff is harvested for use in on-site processes. Runoff from areas of roof that cannot be harvested are discharged off site following attenuation. Clean surface water from non-operational areas of the site is captured, passed through an interceptor and held in an attenuation tank before discharge	Low – with the design of the site and the mitigation measures in place.	Nuisance, pollution of controlled water and soil.	**Not significant**

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	Drawing 003 & 004		to the surface water highway drainage system. Surface water runoff from the raw IBA area is passed directly to the dirty water tank within the main plant for re-use. Runoff from areas of external kerbed hard standing pass through a hydrocarbon interceptor and silt trap prior to discharge off site. Surface water discharged from the bund in the eastern section of the site is collected in a toe drain which and discharged off-site following appropriate attenuation. Drainage from all waste handling area (inc. the bunker) are positively drained to sealed tanks (which are subject to routine inspection), with water re-circulation within the process. Any			

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			disposal is to sewer or tankered to an appropriately licensed facility. In the unlikely event of a fire, the volume of fire water required is minimised by the use of targeted firefighting devices (e.g. sprinklers, mist, inert gases and foams). Additionally, the water is discharged to either the waste bunker and/or a primary containment tank. Provision have been made for re-circulation for firefighting water and removal for discharge to sewer or to tanker for disposal off-site to an appropriate licensed facility.			
Percolation of contaminated liquid into groundwater	Ground water	Ground water	Secondary containment is provided within the SuDS pond, including emergency shut-off valve and low permeability lining (e.g engineering	Low	Contamination nuisance, pollution of soil	**Not significant**

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			clay) to contain the water within the SuDS. The operational areas, including material storage locations on site are surfaced with impermeable surfacing to prevent percolation of contaminated materials into the underlying soil and groundwater. Waste storage areas surfacing, and drainage systems are subjected to routine inspection to ensure their integrity. Tanks are surrounded by a leakage containment bund capable of containing at least 110% of the volume of the largest tank within the bund. Runoff from the site surfaces is collected in the sealed trade effluent drain system.		and controlled water.	

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Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			Contaminated firewater will be contained and prevent, from entering un-surfaced ground. Materials suitable for absorbing and containing minor spillages is maintained on site. Minor spillages are cleaned up immediately, using sand or proprietary absorbent to clean up liquids and placed in alternative containers for disposal off-site to a suitable facility. In the event of a major spillage immediate action is taken to contain the spillage and prevent liquid from entering surface water drains and the unsurfaced ground. The spillage is cleared immediately and placed in containers for off-site disposal and NRW will be notified. Any weaknesses in surfacing are repaired immediately using temporary			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			solutions, and with permanent measures implemented as soon as practicable. The Plant Manager is responsible for implementing risk management measures in conjunction with the Best Available Techniques and Operating Techniques (Ref: 410.11035.00011_BATOT).			
Litter						
Litter	Potentially sensitive receptors including controlled water, commercial and industrial, local	Air	The Plant Manager and operatives inspect the site and surrounding area on a regular basis to collect any litter and return it to the main storage areas. Incoming waste vessels that are not fully enclosed are sheeted (or netted) to	Low – with the measure implemented on site.	Nuisance human and environmental receptors.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
	transport network, recreational areas and ecological receptors as identified in Table 2.		ensure no escape of waste materials during transit. Incoming waste to the site is unloaded directly into the waste bunker inside the waste reception building. Fast shutting doors assist in the prevention of litter escaping the building. A programme of periodic road sweeping/cleaning is in place on site. Fencing around the site acts to prevent litter escaping from the site. If necessary, additional netting can be erected to reduce the escape of wind-blown litter. The Plant Manager is responsible for implementing risk management measures in accordance with			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			operational and management procedures.			

Table 4 Accidents Risk Assessment and Management Plan

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
Spillage or leakage from site equipment	Local land quality, surface water and groundwater (aquifer).	Runoff and percolation through ground.	Tanks are surrounded by a leakage containment bund capable of containing at least 110% of the largest tank within the bund. Storage tanks are constructed to the appropriate British Standard. Tanks are inspected visually on a regular basis by site staff to ensure continued integrity and identify the requirement for any remedial action. Any remedial action will be recorded. Site staff undertake regular monitoring for evidence of spillage and leakage. Alongside regular visual inspections, the tanks are	Low – with the measures implemented on site.	Contamination of land, groundwater and surface water. Nuisance.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			fitted with level indicators to prevent overfilling. The facility building, in which potentially polluting materials are located, drain directly to a sealed internal foul drainage system. Materials suitable for absorbing and containing minor spillages are maintained on Site. Minor spillages will be cleaned up immediately, using sand or proprietary absorbent to clean up liquids and placed in alternative containers. In the event of a major spillage immediate action will be taken to contain the spillage and prevent liquid from entering surface water drains and the unsurfaced ground.			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			The spillage will be cleared immediately and placed in containers for off-site disposal and NRW will be notified. The Plant Manager is responsible for implementing risk management measures in conjunction with the Best Available Techniques and Operating Techniques (Ref: 410.11035.00011_BATOT).			
Fire	Potentially sensitive receptors including controlled water, commercial and industrial, local transport network, recreational areas and ecological	Air Land, surface water and groundwater.	The site has the following in place which seeks to reduce the impacts as the result of a fire: • Fire and site evacuation procedures;	Low - due to the fire preventative measures, inspections and maintenance processes	Harm to human health and ecology. Nuisance. Contamination of land, groundwater and surface water	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
	receptors as identified in Table 2. See Drawing 003 & 004.		• A fire alarm system connected to audible and visual (stroboscopic) signal; • Local firefighting equipment (including fire extinguishers) is provided at designated locations; • Targeted firefighting devices (e.g. sprinklers, mist, inert gases and foams. Incompatible materials are stored apart. The size of stockpiles of combustible material is limited. Should a vehicle be found to be carrying a smouldering load, it is directed to the fire bay and the fire	implemented at the site.		

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			service called to deal with the vehicle. If a batch of waste is found to be smouldering or alight once tipped in the residual waste reception bunker, the waste would be doused with the fire cannon. The plant inspection schedule includes checks of electrical equipment within the site to ensure any faults are identified and repaired. Smoking is not permitted in the operational areas of the site. Operators working practices ensure assessment of fire hazards and training of employees in fire			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			prevention, e.g. use of fire extinguishers and emergency procedures. No waste is burned on site and any fires at the site is treated as an emergency. NRW are advised of all incidents of fire as soon as practicable.			
Security and Vandalism	Potentially sensitive receptors including commercial and industrial, local transport network, recreational areas and ecological receptors as	Land, surface water, groundwater, air.	In order to prevent unauthorised access, a number of security measures are in place at the site including: • 24-hour CCTV surveillance which covers the site and are digitally recorded;	Low – with the security measures implemented at the site.	Theft, plant failure, harm to human health, environmental harm.	**Low**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
	identified in Table 2. Drawing 003 & 004		• Outer perimeter palisade fencing and lockable gates at the site entrance; • Weighbridge personnel control vehicle entry and exit into the facility for the outer perimeter fencing during office hours; and • Additional inner security fence line. The intercom and CCTV coverage allow the staff to control all incoming traffic and open gates remotely from the control room during out of office hours. Non authorised pedestrians make use of the intercom to			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			communicate with the weighbridge in order to gain entry. A documented security manual is in place which is subject to annual review The Plant Manager is responsible for implementing risk management measures in conjunction with the Operating Techniques (Ref: 410.11035.00011_BATOT).			
Flooding	Surface water, soils and groundwater. Receptors as identified in Table 2.	Flood waters over land	The site lies in flood zone B, 'areas known to have flooded in the past'. Sustainable drainage (SuDS) techniques are implemented to satisfy surface water management.	Low – with the implementation of sustainable drainage.	Contaminated flood waters impacting, controlled water, land, aquifers, ecological and	**Not Significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			Surface water run-off is directed away from buildings. Rainwater falling directly onto the building roof areas is harvested and reused where practical.		industrial/commercial areas.	
Vehicle collisions	Harm to human receptors		The site implements strict vehicle movement protocols to prevent collisions.	Low	Harm to human health	**Low**
Plant Failure	Potentially sensitive receptors including commercial and industrial, local transport network, recreational areas and ecological receptors as	Air, surface water, ground water	All equipment will be subject to pre-planned preventative maintenance checks and maintained in accordance with manufacturer's recommendations. Should any problems, malfunctions or breakdowns occur, which affects the ability to safely function, the	Low – with the preventative systems in place on site.	Nuisance, harm to human health and environmental harm.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
	identified in Table 2. Drawing 003 & 004.		treatment will stop until the problems are rectified. Monitoring systems are in place to ensure that all relevant parameters are recorded and that any operating faults can be detected. When detected, action is taken and this may involve the use of standby equipment. The Plant Manager will be responsible for implementing risk management measures in conjunction with the Best Available Techniques and Operating Techniques (Ref: 410.11035.00011_BATOT).			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
Explosion	Potentially sensitive receptors including commercial and industrial, local transport network, recreational areas and ecological receptors as identified in Table 2. Drawing 003 & 004.	Air	All electrical equipment will be subject to inspections and marked appropriately to conform with applicable regulations and legislation. Incompatible substances are stored separately. Chemical and raw material are stored in accordance with material safety data sheets. Training is provided to all operative on site to understand the risks. 'No Smoking' signs will be erected, as appropriate.	Low – with the preventative measures implemented.	Contaminated land, air pollution and harm to human health.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			The site will operate a permit to work system and any 'hot works' will only be permitted if the atmosphere is free from explosive gases. The site implements fire precaution measures and a fire management plan.			
Unauthorised waste receipt	Potentially sensitive receptors including commercial and industrial, local transport network, recreational areas and ecological receptors as	Air and land	Strict waste acceptance procedures are implemented on site. In the event that unauthorised waste is accepted at the site, the waste is segregated and stored in designated quarantine/isolation area prior to removal off site.	Low – due to the waste acceptance procedures on site.	Nuisance, human and environmental receptors.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
	identified in Table 2.		The quarantine area is located on impermeable surface and takes the form of a skip.			

Table 5 Odour Risk Assessment and Mitigation Plan

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
Odour from waste delivery and storage of waste.	Commercial and industrial and recreational receptors.	Air	Waste reception and treatment occurs within the confines of the building. The fast-acting roller doors are closed (in approximately 30 seconds) prior to the vehicle unloading and process air ventilation occurs on site to minimise fugitive odorous emissions. In the unlikely event malodorous waste is accepted at the site it will be isolated from other incoming material and then either reloaded into the original delivery vehicle, or immediately passed for processing. The building has been constructed to minimise fugitive emissions. The building heights have been minimised to control the total volume	Low – with the measures implemented on site.	Odour Nuisance and loss of amenity.	**Not significant**

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			of air to be managed by the combustion process. The main process building fabric is maintained continually, other than during periods of essential maintenance and the fast-acting roller doors are checked routinely. The tipping floor area is fully cleaned once every month with disinfectant. Site operatives conduct daily inspection of the perimeter to identify any unacceptable odour. Site personnel also conduct informal olfactory monitoring during operational hours. If any odour is identified the cause will be investigated and odorous material will be isolated in a sealed container			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	***What is at risk what do I wish to protect?***	***How can the hazard get to the receptor?***	***What measures will you take to reduce the risk? – Who is responsible for what?***	***How likely is this contact?***	***What is the harm that can be caused?***	***What is the risk that still remains? The balance of probability and consequence***
			before removal offsite to a suitably licenced treatment facility. The Plant Manager is responsible for implementing Risk Management measures in accordance with operational and management procedures.			

5.0 Conclusion

This qualitative ERA has been undertaken in accordance with EA guidance. The assessment concludes that with the implementation of the risk management measures described above, potential hazards from the proposed changes to the permitted Installation are not likely to be significant or pose a significant risk of harm to sensitive receptors in the vicinity of the site and therefore, no further assessment is required.

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