SITE CONDITION & BASELINE REPORT

ICT UK Paper Mill - Application Reference (WPCC8848)
Industrie Cartarie Tronchetti UK Limited

JER9156
Site Condition & Baseline Report
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13 March 2023

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Quality Management					
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1 INTRODUCTION

1.1 Background

1.1.1 Industrie Cartarie Tronchetti (herein termed ICT) intends to submit an application to the Natural Resources Wales (NRW) for a permit to operate a proposed paper mill for the manufacture of tissue products in the Northern Gateway industrial area in Deeside. The permit will cover the operation of the paper mill which will produce ~1410,000 tonnes per annum of tissue products.

1.1.2 The paper mill facility will be regulated as a Part A1 installation and to support the application for the permit, there is a requirement to provide an Industrial Emissions Directive (IED) Baseline Report as well as a Site Condition Report.

1.1.3 This Site Condition and Baseline Report (SCBR) has been prepared in accordance with the European Commission Guidance (Ref. 1) concerning baseline reports required under the IED and also the Environment Agency's H5 Horizontal Guidance.

1.1.4 The IED, Article 22, paragraphs 2 to 4, contains provisions for the definitive cessation of activities involving the use, production or release of relevant hazardous substances (RHS) in order to prevent and tackle potential soil and groundwater contamination from such substances. A key tool in this respect is the establishment of a 'baseline report' where an activity involves the use, production or release of RHS and having regard to the possibility of soil and groundwater contamination. The report will form the basis for a comparison with the state of contamination upon definitive cessation of activities. Where information produced pursuant to other national or union law reflects the state at the time the report is drawn up, that information may be included in, or attached to, the baseline report.

1.1.5 RPS has prepared this report based on information and data available at the time of preparation of the report.

1.2 Key Objectives

1.2.1 The key objectives of this report are to:

- Establish the environmental setting of the site and determine its environmental sensitivity
- Identify activities that are currently undertaken at the site, including the identification of Relevant Hazardous Substances and preventative measures implemented to protect land and groundwater
- Establish the extent of historical contamination in the soil and groundwater in areas where current and/or future processes may include similar potentially contaminating substances
- To identify the Site Conditions at the site at the point of varying the permit for the facility (baseline condition) such that they may be used as a point of reference to determine whether the site has been contaminated during the site's permitted operation in line with IED and Environmental Permitting Regulations requirements; and
- To provide conclusions on whether land quality has been impacted from historical activities.

1.2.2 With respect to the IED eight stage process, a summary of each stage is outlined below along with where it is addressed within this report:

- Stage 1 - Identify hazardous substances used, produced or released at the installation. This is addressed within Section 3 of this report
- Stage 2 - Identify relevant hazardous substances used, produced or released at the installation from the list of hazardous substances identified in Stage 1. This is addressed within Section 4 of this report
- Stage 3 – Undertake an assessment of site-specific pollution possibility for relevant hazardous substances. This is addressed within Section 5 of this report

- Stage 4 – Evaluation of Site History and potential for relevant hazardous substances to be present in soils and groundwater. This is addressed within Section 6 of this report
- Stage 5 – Evaluation of Environmental Setting to determine the fate of potential emissions of relevant hazardous substances This is addressed within Section 7 of this report
- Stage 6 – Site Characterisation that synthesises findings of Stage 5 and 6 on the basis of a Conceptual Site Model. This is addressed within Section 8 of this report
- Stage 7 – Site Investigation (including sampling strategy). This is addressed within Section 9 of this report; and
- Stage 8 – Production of Baseline Report. This is addressed within Section 10 of this report.

1.3 Description of Permitted Activities

1.3.1 The paper mill is to be built over three phases as follows:

- Phase 1 of the Paper Mill Facility: 2022 (Q3) - 2024 (Q1)
- Phase 2 of the Paper Mill Facility: 2024 (Q4) - 2026 (Q2)
- Phase 3 of the Paper Mill Facility: 2034 (Q1) - 2035 (Q3)

1.3.2 Phase 1 will comprise pulp storage, bale handling, paper manufacture hall, jumbo rolls storage, converting area, raw materials storage, high bale warehouse, dispatch, water treatment plant, chemical storage, CHP plant and 2 boilers.

1.3.3 Phase 2 will comprise pulp storage, bale handling, paper manufacture hall, jumbo rolls storage, and CHP plant.

1.3.4 Phase 3 will comprise pulp storage, bale handling, paper manufacture hall, jumbo rolls storage, converting area, high bale warehouse and CHP plant and 2 boilers.

1.3.5 Given the timing of phase 3 of the development an environmental permit is being sought for phases 1 and two from the start of operations.

1.3.6 All paper will be produced using virgin pulp which will be delivered to site already prepared. Any waste pulp produced will be reused within the process to minimise waste. Each paper machine will make ~70,000 tonnes per year of tissue.

1.3.7 The activities to be undertaken at the installation are summarised below:

- **Raw Material Storage** – Bales of cellulose are stored in the pulp storage warehouse prior to being used to produce the tissue paper. All chemicals used in the process will be stored within dedicated chemical storage areas. Gas and water are supplied from mains via pipe connections.
- **Pulp Preparation** - The cellulose bales are pulped in the pulper machine by mixing with water and subjected to mechanical action from the rotor equipped with blades placed at the base. This disintegrates the fibres to produce the pulp stock.
- **Pulp Treatment** - The pulped stock is sent through a series of machines that separate small debris and break up clumps. Wastewater and impurities are sent to the water treatment facility.
- **Formation of tissue paper and winding in reels** – Pulp is sent to the paper machine where it is placed on wire and felt where the excess water is drained leaving a wet fibre sheet. This is transferred to a drying section by means of the felt where it is pressed and dried using the Yankee dryer, a cylindrical drum heated by steam, and hot air generated by hoods above the Yankee. This dries the sheet to form the tissue paper. The tissue paper is scraped from the Yankee drying cylinder using a steel blade to form a creped structure and then wound on reels and wrapped in polythene prior to storage in the jumbo reels warehouse.

- **Multi-ply paper formation** - This process converts the jumbo reels into tissue products such as toilet rolls, kitchen towels etc. The jumbo reels are transferred to a converting machine where they are unwound and rewound, coupling one or more plies together and then, if needed, cut to size through circular blades to form the final product which is then stored prior to dispatch from the site.
- **Heat and Power Generation** – Heat and power for the installation will be generated on site. Each paper line phase will consist of a 24.16 MW_{th} gas turbine and combuster unit, 14.6 MW_{th} post burner boiler for supplying steam and a 13.6 MW_{th} burner for supplying heat to the Yankee Hood should the CHP unit not be running. Gas boilers are installed to supply heat to the production hall. In addition to the main heat and power generation, there will be a diesel emergency backup generator installed. The installation will send excess electrical energy from the CHP plant to the national grid when available and import electricity from the national grid where there is a shortfall on site.
- **Wastewater Treatment** – Wastewater from the production facility is treated on site using a number of stages including sedimentation / flotation, oxidation / MBBR and filtration. The wastewater treatment plant produces a sludge which is dewatered and sent off site for disposal. The wastewater treatment plant will discharge ~ 5,184 m^3/day into the Dee Estuary.

1.3.8 The activities to be carried out at the site fall under the requirements to be permitted as a Part A (1) installation under the Environmental Permitting (England and Wales) Regulations 2016[1] as follows:

- Section 1.1 Part A (1) (a) - Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts
- Section 6.1 Part A (1) (b) – Producing in industrial plant, paper and board where the plant has a production capacity of more than 20 tonnes per day; and
- Section S5.4 Part A (1) (a) (i) – Disposal of non-hazardous waste in a facility with a capacity exceeding 50 tonnes per day by biological treatment.

1.3.9 In addition to the main activity, the following directly associated activities (DAAs) will be carried out at the site:

- Surface Water - Discharge of clean uncontaminated site surface water from roofs, paths and roads:
- Raw Materials Storage
- Waste Storage

[1] https://www.legislation.gov.uk/uksi/2016/1154/contents/made

2 APPLICATION SITE CONDITION REPORT

2.1 Application Phase

2.1.1 This section provides references to the various chapters of this SCBR, where available information on the known current condition of the operational area is provided.

2.2 Site Condition Report Summary

1.0 Site Details	
Name of the applicant	Industrie Cartarie Tronchetti (ICT)
Activity address	Unit C, The Airfields Roadside & Retail, Northern Gateway, Welsh Road, Deeside, Flintshire, CH5 2RD.
National grid reference	SJ 32056 69754
Site area (ha)	c. 23.86
Document reference and dates for Site Condition Report at permit application and surrender	Deeside Paper Mill Site Condition and Baseline Report
Document references for site plans (including location and boundaries):	Drawing 1 - 13001_SK228 – Site Location Plan Drawing 2 - 12500-AEW-SI-XX-DR-A-0504_P8 – Proposed Site Plan

2.0 Condition of the land at permit issue	
Environmental setting including: • Topography • Geology • Hydrogeology • Hydrology • Environmental Consents, Licences, Authorisations, Permits and Designations	Details of the environmental setting are provided in Section 7 of this SCBR.
Pollution history including: • Location, nature of incidents or direct discharges that may have affected soil or groundwater • Historical land uses and associated contaminants	Pollution history details are provided in Section 6 and 8 of this SCBR.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	Details regarding historical contamination at the site are provided in Section 6 and 8 of this SCBR.
Baseline soil and groundwater reference data	Details regarding baseline soil and groundwater reference data at the site are provided in Section 7 of this SCBR.
Supporting information	Reports referenced in Section 6.3.

3.0 Permitted activities	
Permitted activities	Details regarding permitted activities on the proposed site are provided in Section 1.3. of this SCBR.

Non-permitted activities undertaken	Details regarding non-permitted activities on the proposed site are provided in Section 1.3 of this SCBR.
Document references for: • plan showing activity layout; and • environmental risk assessment.	A site location and boundary plan for the facility are shown in Appendix D1.

3 STAGE 1 – IDENTIFY WHICH HAZARDOUS SUBSTANCES ARE USED, PRODUCED OR RELEASED AT THE INSTALLATION AND PRODUCE A LIST OF THESE SUBSTANCES

3.1.1 Stage 1 of the IED baseline assessment is to identify which hazardous substances are used, produced or released at the installation and to produce a list of these substances.

3.1.2 The IED relates to contamination risk associated with “hazardous substances” used, produced and/or released by the facility. Hazardous substances are defined as substances or mixtures defined in Article 3 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on Classification, Labelling and Packaging of substances and mixtures (the “CLP Regulations”). The determination of whether a substance is a hazardous substance is largely determined using the substance CAS Number and European Chemicals Agency (ECHA) database (Ref. 2). Substances hazardous to the environment as defined by the CLP Regulations relate to “Environmental Hazards” which in turn relates to aquatic toxicity, defined as follows (EU, 2013):

- Aquatic Acute 1 – H400: Very toxic to the aquatic life (Risk phrase R50)
- Aquatic Chronic 1 – H410: Very toxic to the aquatic life with long-lasting effects (Risk phrase R50/53)
- Aquatic Chronic 2 – H411: Toxic to the aquatic life with long-lasting effects (Risk phrase R51/53)
- Aquatic Chronic 3 – H412: Harmful to aquatic life with long-lasting effects (Risk phrase R52/53)
- Aquatic Chronic 4 – H413: May cause long lasting harmful effects to aquatic life (Risk phrase R52, R53).

3.1.3 Of the materials stored and used at the facility, those substances that are designated hazardous substances or potentially contain hazardous substances are shown in Table 3.1 below:

Table 3.1: Summary of Potential Pollution Risk of Hazardous Substances

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
Aquence FB 5000 – Core glue	Stable under recommended storage conditions	Liquid	Miscible	**H400:** Very toxic to aquatic life **H410:** Very toxic to aquatic life with long lasting effects **H411:** Toxic to aquatic life with long lasting effects	No data available	Rapidly/inherently biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Pickup Glue – Vinyl Glue	Stable under recommended storage conditions	Liquid	Miscible	**H411:** Toxic to aquatic life with long lasting effects	No data available	Rapidly/inherently biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Laminated Glue – Vinyl Glue	Stable under recommended storage conditions	Liquid	Miscible	**H411:** Toxic to aquatic life with long lasting effects	No data available	Rapidly/inherently biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All	No

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
							inspections will be recorded.	
Tail Tie – Vinyl Glue	Stable under recommended storage conditions	Liquid	Miscible	**H411:** Toxic to aquatic life with long lasting effects	No data available	Rapidly/inherently biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Diesel	Stable under normal conditions	Liquid Stored in 2000 litre tank	Immiscible in water. Miscible in aromatic solvents	**H411:** Toxic to aquatic life with long lasting effects	Floats on water.	Considered biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
FGR13193 - Fragrance	Stable under normal conditions	Liquid	Ethanol, oils and fats	**H400:** Very toxic to aquatic life **H410:** Very toxic to aquatic life with long lasting effects **H411:** Toxic to aquatic life with long lasting effects	Not applicable	Not applicable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All	No

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
							inspections will be recorded.	
FennoCide Quat 40 – Microbiological treatment	Stable under normal conditions	Liquid Stored in 4 x 1m^3 bulk containers (IBC) or 2.5m^3 tank	Completely miscible	**H400:** Very toxic to aquatic life **H411:** Toxic to aquatic life with long lasting effects	No data available	Readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
FennoSpec 7810 - Microbiological treatment	Strong acid decomposes slowly to form carbon monoxide	Liquid Stored in 4 x 1m^3 bulk containers (IBC) or 2.5m^3 tank	Completely soluble	Not ecotoxic	No data available	Readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Lubricating oil	Stable under normal conditions	Liquid	Insoluble	**H413:** May cause long lasting harmful effects to aquatic life	No data available	This material is not expected to be readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All	No

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
							inspections will be recorded.	
Marecoat A 598 – Coating chemical	Stable under normal conditions	Liquid Stored in 20 x 1m^3 bulk containers (IBCs)	Miscible	**H411:** Toxic to aquatic life with long lasting effects **H412:** Harmful to aquatic life with long-lasting effects	No data available	Some components are poorly biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Marelease R 250 – Coating chemical	Stable under normal conditions	Liquid Stored in 20 x 1m^3 bulk containers (IBCs)	Insoluble	No data available	No data available	No data available	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Sodium hydroxide	Stable under normal conditions	Crystalline Solid or solution	Exothermically soluble in water	**H402:** Harmful to aquatic life	No data available	Not applicable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All	No

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
							inspections will be recorded.	
Liquid waste	Stable under normal conditions	Aqueous liquids containing process chemicals identified above	Various	**H413:** May cause long lasting harmful effects to aquatic life	No data available	This material is not expected to be readily biodegradable	Low – All wastes will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Charge Control (SYCONTROL P 90 SDS)	Stable under normal conditions	Liquid Stored in 2 x 1m^3 bulk container (IBC)	Miscible with water	**H412:** Harmful to aquatic life with long-lasting effects	No data available	This material is not expected to be readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Antifoam (Defoam P62 SDS)	Stable under normal conditions	Light yellow liquid Stored in 1 x 1m^3 bulk container (IBC)	Emulsifiable in water	**H413:** May cause long lasting harmful effects to aquatic life	No data available	This material is not expected to be readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All	No

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
							inspections will be recorded.	
Colouring additives (Pergasol Red SDS)	Stable under normal conditions	Dark red liquid. 3 x 1m^3 bulk container (IBC)	Water soluble	**H400:** Very toxic to aquatic life **H410:** Very toxic to aquatic life with long lasting effects	No data available	This material is not expected to be readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Wet strength resin (Kymene 217LXE SDS)	Stable under normal conditions	2 x 35m^3 tank. Tank for chemicals are equipped with a bund and double skinned. They are equipped with level indicators and alarm.	No data available	**H412:** Harmful to aquatic life with long-lasting effects	No data available	This material is not expected to be readily biodegradable	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the site EMS processes and procedures. All inspections will be recorded.	No
Dry strength resin	Stable under normal conditions	2 x 25m^3 tank. Tanks for chemicals are equipped with a bund and double	No data available	No data available	No data available	No data available	Low – All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage. Chemical storage areas will be subject to daily inspections as part of the	No

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
		skinned. They are equipped with level indicators and alarm.					site EMS processes and procedures. All inspections will be recorded.	

4 STAGE 2 – IDENTIFYING THE RELEVANT HAZARDOUS SUBSTANCES

4.1.1 Stage 2 of the IED baseline assessment is to identify the RHSs from those identified in the stage 1 assessment.

4.1.2 On the basis of hazardous substances identified above, those considered to be RHS must be defined. Those hazardous substances that are incapable of contaminating soil or groundwater can be disregarded for further consideration although a justified reason for exclusion must be provided.

Process Chemicals

4.1.3 The paper converting and production process includes the use of adhesives, fragrances, coating chemicals, resins, acids, antiscale, antifoam and microbiological treatment chemicals. Many of these are very toxic to the water environment. Generally, they are not likely to be persistent in the environment. All chemicals will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage.

Hydraulic Oil and Lubricants

4.1.4 Hydraulic oil and lubricants are used on site by mobile plant and operational equipment as part of the site operations. These substances are capable of contaminating soil and groundwater should they be released into the environment. These oil-based substances are toxic to the water environment and although they are biodegradable in particular conditions, larger volumes of these substances are likely to be relatively persistent in the environment. These substances are stored on site in small quantities. All oils will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage.

Diesel

4.1.5 Diesel will only be used for the emergency generator. It is capable of contaminating soil and groundwater should they be released into the environment. It is toxic to the water environment and although biodegradable in particular conditions, larger volumes of these substances are likely to be relatively persistent in the environment. Diesel will be stored in a bunded 2,000 litre tank on impermeable surface with sealed drainage.

Liquid Waste

4.1.6 Aqueous liquids containing process chemicals identified above e.g., adhesives/sealants from the converting machines and equipment washing, and exhausted oils will be produced on site.

Water Treatment Plant Nutrients and Chemicals

4.1.7 Nutrients and flocculants will be used in the treatment of the wastewater. These are stored on site in relatively small quantities in solid form. Flocculants can be toxic to the water environment. Typical nutrients such as nitrogen and phosphorous may also be toxic to the water environment in large quantities. All chemicals for water treatment will be stored undercover within dedicated chemical stores on impermeable surfaces with sealed drainage.

Paper Mill Sludge

4.1.8 Sludges from the paper mill effluent treatment process may contain nutrients, inorganic / organic contaminants including heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), dioxins and

furans, dioxin-like Polychlorinated Biphenyls (PCBs). Sludges from the Paper Mill effluent treatment will have a dryness content of approximately 12 to 18% and will be stored in a bulk container. Subject to testing once operational the paper mill sludge is expected to be non-hazardous and therefore is not considered further.

4.2 Relevant Hazardous Substances

4.2.1 Operational production areas are all situated within the building on impermeable surfaces with sealed drainage system. The pathways to subsurface soils and groundwater underlying the operational facility are dependent on the integrity / condition of either the surface hardstanding; the nature of any primary, secondary or tertiary containment measures included in design; and the operational / emergency measures implemented on the operational facility as part of the EMS and SOPs.

4.2.2 Of all the hazardous substances identified to be used or produced at the site, none are assessed as being relevant hazardous substances as they are either stored in small quantities, stored and used within a building or in sealed bunded areas and subject to regular inspections as part of site management systems.

4.2.3 The site-specific pollution associated with the hazardous substances has been determined as low.

4.2.4 Although no relevant hazardous substances have been identified, the further stages of the assessment have been included below for completeness in preparing a baseline assessment of the site prior to permitting.

5 STAGE 3 – ASSESSMENT OF THE SITE-SPECIFIC POLLUTION POSSIBILITY

5.1.1 Stage 3 of the IED baseline assessment is to assess the site-specific pollution possibility.

5.1.2 Any relevant hazardous substances identified in Stage 2 are to be considered in Stage 3 in the context of the site itself to determine whether circumstances exist which may result in the release of the substance in sufficient quantities to represent a pollution risk, either as a result of a singular emission or as a result of accumulation from multiple emissions.

5.1.3 Circumstances under which emissions may occur include:

- Planned emissions
- Accidents and / or incidents; and
- Routine operations.

5.1.4 The site will maintain an up-to-date Environmental Management System (EMS) compliant with ISO 14001, 9001 and 18001. This EMS will outline procedures in place to minimise the frequency of accidents or incidents occurring and it will outline procedures in place to minimise the risk in the event of an accident or incident occurring. These are summarised below:

- All aspects of the site operations have been assessed for significance and an appropriate environmental risk assessment has been carried out
- Regular inspections of impermeable surfaces, tanks, bunds and pipe work will be carried out and repairs and maintenance will be undertaken as necessary
- All plant and equipment will be inspected and maintained in accordance with legal requirements and the manufacturer's recommendations and maintenance records will be kept by site management
- Any complaints received about site activities will be recorded and investigated in accordance with the complaints log and investigation procedure
- A mechanism will be in place to fully investigate any environmental incidents and non-conformances in both normal and abnormal conditions and to record any remedial actions that might be taken and how to prevent re-occurrence. Relevant employees will be trained in how to report such occurrences including near misses and hazards from both an environment and health and safety perspective
- A site-specific emergency contingency and accident management plan will be in place; and
- All staff will receive environmental training relating to environmental best practice on induction and will be required to follow safe working procedure. Key personnel will also be required to complete Environment Agency technical competence assessments and continuing competence assessments as applicable.

5.1.5 Emissions as a result of the hazardous substances used during routine operations are outlined in the sections below.

5.2 Oil Based Hazardous Substances

5.2.1 The site requires hydraulic oils and lubricants to operate. All oil-based substances stored on site will be located on impermeable surfaces within areas bunded to contain 110% of the tank volume and oil drums will be located on drip trays.

5.2.2 The stored oil-based substances will be subject to daily visual checks for integrity and leaks. The site surfaces will be regularly inspected as part of the EMS and will be repaired where necessary to maintain the impermeable nature.

5.3 Process Chemicals

5.3.1 Many of the chemicals used in the production process contain hazardous substances. Safety Data Sheets are presented in Appendix D2 for hazards substances used in core glue, fragrance, coating and microbiological treatment, all of which can be toxic to aquatic life.

5.3.2 The chemicals will be delivered by road and discharged into dedicated storage tanks. The duty member of staff will be responsible for checking that the material to be delivered is discharged into the appropriate storage vessel and that there is sufficient capacity within the storage vessel prior to commencing unloading operations.

5.3.3 The chemicals will be subject to appropriate storage and handling practices which will be described and enforced through the site's EMS.

5.3.4 Given the volumes of the materials likely to be stored and used on site at any one time the potential risk to soil or groundwater is low.

5.4 Liquid Waste

5.4.1 Aqueous liquids from the converting process will be stored in a double skinned metallic tank and exhausted oil within a double skinned plastic tank. These liquids will be subject to the same pollution control measures identified above.

5.5 Water Treatment Plant Nutrients and Chemicals

5.5.1 Nutrients and flocculants used in the water treatment plant will be stored in bags or $1m^3$ bulk containers. They will be stored on site in relatively small quantities and handled as solid.

5.5.2 Sludge generated by this treatment is discussed below and the wastewater subject to further biological treatment. The technology used involves biological oxidation, which in the presence of oxygen, oxides, contaminants reduce the values of COD (Chemical Oxygen Demand) and BOD (Biological Oxygen Demand). The biological sludge is separated from the clarified water and the clarified effluent discharged into the treated water tank and discharged to the River Dee. This will be permitted by a bespoke consent to discharge and is not considered further.

5.6 Site Specific Pollution Possibility

5.6.1 A summary assessment of the site-specific pollution risk associated with material containing RHS identified for the site is presented in Table 5.1.

Table 5.1: Chemical Inventory and Assessment of Actual Pollution Risk

Substance	Hazard	Approx. volume or weight per annum (8,322 hours) *	Amount stored on site	Management/ control measures	Actual Pollution Risk
Wet strength resin	External spillage during delivery. Loss of containment as a result of an accident. Internal spillage during normal working activities.	2,100 tonnes	210 tonnes	The potential for contamination of ground or ground water is low given that chemicals and oils will be stored within bunded areas or on drip trays. Management systems are in place for regular inspection, servicing and maintenance. Deliveries are overseen by trained staff. Operational areas are situated on impermeable areas and have a sealed drainage system.	None Identified
Pickup Glue		180 tonnes	14 tonnes		
Laminated Glue		99 tonnes	8 tonnes		
Core Glue		474 tonnes	30 tonnes		
Fragrance		12 tonnes	7.2 tonnes		
Oil for log saw		4 tonnes	0.4 tonnes		
Oil for air compressor		0.7 tonnes	0.3 tonnes		
Oil for gears		0.4 tonnes	0.16 tonnes		
Lubricating grease		0.15 tonnes	0.1 tonnes		
Coating chemicals		232 tonnes	20 tonnes (per single phase)		
Antiscale		7 tonnes	2 tonnes (per single phase)		
Microbiological treatment		94 tonnes	4 tonnes (per single phase)		
Charge control		36 tonnes	2 tonnes (per single phase)		
Anti-foam		4 tonnes	1 ton (per single phase)		
Acids		8 tonnes	5 tonnes (per single phase)		
Colouring additives		10 tonnes	3 tonnes (per single phase)		
Sodium hydroxide		13 tonnes	5 tonnes (per single phase)		
WTP nutrients	External spillage during delivery or internal	4 tonnes	3 tonnes (per single phase)	The potential for contamination of ground	None Identified

Substance	Hazard	Approx. volume or weight per annum (8,322 hours) *	Amount stored on site	Management/ control measures	Actual Pollution Risk
WTP flocculants	spillage during normal working activities.	6 tonnes	2 tonnes (per single phase)	or ground water from a spillage is extremely low as the residue is a dry solid and would be cleaned up immediately using dry techniques.	
Liquid waste	External spillage during removal, loss of containment as a result of an accident	320 tonnes	Variable. Double skinned metallic tank.	The potential for contamination of ground or ground water is low given that liquid wastes will be stored within bunded areas or on drip trays. Management systems are in place for regular inspection, servicing and maintenance. Deliveries are overseen by trained staff.	None Identified
Exhausted oil		2 tonnes	Variable. Double skinned plastic tank.		

6 STAGE 4 – PROVIDE A SITE HISTORY

6.1.1 The purpose of Stage 4 is to determine which of the hazardous substances identified in Stage 3 have the potential to be present on site in the soil and groundwater already as a result of activities undertaken at the site to date and to determine whether they are coincident with potential future emission points.

6.1.2 This section should consider both the history of the site prior to development of the current facility and the operational history of the current facility.

6.2 General Site History

6.2.1 Since earliest mapping c. 1869 the site is shown to be agricultural land with embankments bounding the site to the north and west (annotated as the Central Railway Line) and along the southern boundary until the site was used as an airfield c. 1916. The land to the east was occupied by buildings/structures associated with a military camp and quarters (former RAF Sealand 'South Camp' site) and later use as a Maintenance Unit.

6.2.2 The Hawarden Bridge Steel Works is shown approximately 250m west of the site c. 1913 and an airfield is shown to the north of the site c.1948.

6.3 Previous Ground Investigation

6.3.1 The following previous contaminated land investigation and assessment report pertains to two land parcels termed Plots B and C (Plot C represents the assessment site).

- JPG, Geoenvironmental Ground Investigation, The Airfields, Deeside, December 2018 (Reference MHP/GI/4671.v1)

6.4 Potential Historical Contaminants

6.4.1 Potential contaminant sources associated with the military and airfield uses of the site include:

- Made Ground associated with the former structures and construction of roads
- Potential localised spillages / leaks of hydrocarbons associated with the historical presence of Above Ground and Underground Storage Tanks; and
- Hazardous gases/soil vapours associated with the Made Ground

6.4.2 Potential contaminants include, heavy metals and other inorganic compounds, Hydrocarbons (fuels, oils and Polycyclic Aromatic Hydrocarbons) and asbestos.

6.5 Operational History

6.5.1 Groundsure information, included within Appendix D3, indicates there have been no historical pollution incidents at the site.

7 STAGE 5 – IDENTIFY THE SITE'S ENVIRONMENTAL SETTING

7.1.1 The Site is located on the western edge of Garden City, a village within the Sealand area of Flintshire. The nearest town centre is Queensferry, which is approximately 1.5 km to the south of the Site. The town of Mold is approximately 12 km to the southwest and the city of Chester is approximately 7.5 km to the east.

7.1.2 Beyond the western boundary of the site and the railway line is the Tata Steel Shotton site. North of the Airfields site is Deeside Industrial Park (DIP) which comprises a large number of distribution and manufacturing units.

7.1.3 Beyond the eastern boundary of the site is Welsh Road (B5441) which provides the main access to Garden City. Garden City was originally developed to house the workers of the Shotton Steelworks and comprises a mix of semi-detached and terraced housing. Garden City has some local facilities which include a pharmacy, church, post office, public houses and primary school. The River Dee runs to the south of the Site.

7.2 Site Setting and Sources of Desk Study Information

7.2.1 The following sections detail the environmental setting of the site. The sources of desk study information utilised in order to describe the condition of the installation, and in particular, to determine the potential for substances to be present in, on or under the land associated with present and past uses of the site and its surrounding areas are listed below:

- JPG, Geoenvironmental Desk Study Report, The Airfields, Deeside, July 2014 (Reference MT/DS/4671.v1 (Appendix D3)
- JPG, Geoenvironmental Ground Investigation, The Airfields, Deeside, December 2018 (Reference MHP/GI/4671.v1 (Appendix D3)
- JPG, Remedial Strategy Report, Plots B & C, The Airfields, Deeside, March 2019 (Reference 4671-JPG-XX-XX-RP-G-0608-S2-P01 (Appendix D3); and
- Information held by the British Geological Survey relating to geology and hydrogeology.

7.3 Topography

7.3.1 The site is at a general elevation of 4.60 m above ordnance datum (AOD) and is generally level.

7.4 Geology and Hydrogeology

7.4.1 The British Geological Survey (BGS) shows that the site is underlain by Tidal Flat Deposits which comprise clays, silt and sands. Underlying the superficial deposits are the Pennine Lower and Middle Coal Measures comprising mudstones, siltstones and sandstones.

7.4.2 DEFRA's Groundwater Vulnerability Map shows the superficial deposits, and the bedrock are classified as Secondary A Aquifers. These comprise permeable layers that can support local water supplies and may form an important source of base flow to rivers.

7.4.3 The site is not in or within 500 m of a groundwater Source Protection Zone.

7.5 Hydrology

7.5.1 The River Dee is located approximately 0.6 km to the south of the site. Shotwick Brook is culverted under the disused railway via a 2,500 mm wide arch culvert in the north-west corner of the site before flowing in open channel in a predominately south-westerly direction along the western boundary of the site. Shotwick Brook ultimately outfalls to the River Dee.

7.5.2 The site is not in or within 500 m of a surface water Source Protection Zone.

7.6 Man-made Pathways

7.6.1 Various drains in open channels or culverted in and around the site, outfall to the River Dee. These include Shotwick Brook, Garden City Drain and Manor Drain.

7.7 Environmental Consents, Licences, Authorisations, Permits and Designations for the Site and Surrounding Areas

Water Discharges and Abstraction Licences

7.7.1 Licenced discharge consents within the vicinity of the site relate to sewage discharges to Manor drain and Garden City drain.

7.7.2 There is one recorded groundwater abstraction point recorded over 500m southwest of the site relating to a borehole for general farming and domestic water supply.

7.7.3 There is one recorded surface water abstraction over 300m southeast of the site used for spray irrigation.

Landfill Sites

7.7.4 There are no recorded active or historical landfill sites within 500m of the site.

Waste / Permitted Sites

7.7.5 There are no records of any historical Integrated Pollution Control (IPC) authorisations within 500m of the site.

7.7.6 Two active permitted installations are recorded in close proximity to the site, within Deeside Industrial Park as follows:

- Di Isocyanate at Tata Steel, Shotton Works; and
- Solvent coating at Excelsior, Parkway.

Statutory Designated / Sensitive Sites within 1 km

7.7.7 The following sensitive land uses have been identified within 1 km of the site:

- Afon Dyfrdwy (River Dee) - Site of Special Scientific Interest (SSSI) and Local Wildlife Site (LWS) approximately 650m southwest of the site; and
- Dee Estuary – SSSI, Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar approximately 820m southwest of the site.

Mining

7.7.8 Information on the Coal Authority website indicates that the site is located 240m north of a Coal Mining Reporting Area.

COMAH

7.7.9 There are no recorded Control of Major Accidents Hazard (COMAH) or Notification of Installation Handling Hazardous Substances (NIHHS) sites within 500m of the site.

Radon

7.7.10 The site is in a radon affected area where between 5% and 10% of homes are above the action level for radon gas.

8 STAGE 6 – SITE CHARACTERISATION

8.1.1 The site is currently unoccupied and comprises mostly grassland used historically as an airfield and military installation. Access to the site is via a newly constructed road (B5441) which forms the southern boundary of the site.

8.1.2 Reworked topsoil was encountered across the site typically less than 0.2m (JPG Geoenvironmental Ground Investigation, December 2018). It comprised dark brown silty sand with abundant rootlets. Rare gravel of ceramic and coal and a metal fragment were identified.

8.1.3 The underlying Tidal Flat Deposits were generally described as light greyish brown medium dense to dense sand, with frequent disseminated shell fragments. Locally horizons of clay were encountered as lenses and thick laminations comprising soft to firm dark greyish brown, sandy clay. Clay horizons were typically noted between 0.15m and 2.00m bgl and 7.50m and 9.00m bgl. The strata were encountered to a maximum depth of 15m bgl (base unproven).

8.1.4 Groundwater seepages were encountered between 1.80m and 3.10m bgl and groundwater strikes between 2.00m and 2.50m bgl, rising to a maximum of 1.80m bgl.

8.1.5 The site does not lie in a groundwater Source Protection Zone.

8.1.6 No contamination sources were identified at the site and no specific requirements for soils or groundwater remediation.

9 STAGE 7 – SITE INVESTIGATION

9.1 2018 Ground Investigation

9.1.1 A ground investigation at the site was undertaken by JPG in 2018 and included one groundwater and six ground gas monitoring visits. A copy of the ground investigation report is included in Appendix D3.

9.1.2 Within Plot C approximately 22 trial pits were excavated, and four cable percussive boreholes were advanced. Gas and groundwater wells were installed in all boreholes.

9.1.3 Selected soils and groundwater samples were tested for a suite of contaminants which included heavy metals, phenol, cyanide and PAHs. Asbestos was also analysed for within selected soil samples.

9.1.4 The analytical suite does not include all hazardous substances detailed to be used at the facility. The following contaminants were not analysed:

- Biocides;
- Total Petroleum Hydrocarbons (TPH) and Extractable Petroleum Hydrocarbons (EPH); and
- Volatile Organic Compounds (VOCs) and Semi Volatile Organic Compounds (SVOCs).

9.1.5 Future ground investigations are planned as part of the site groundworks and construction. The above chemicals will be included in ground investigations to provide a baseline prior to the permit being issued.

Potential Contaminants of Concern

Hydrocarbons

9.1.6 The following table provides groundwater concentrations encountered which exceed Water Quality Standards (WQS).

Table 9.1: PAH Results

Determinand	Exploratory Hole	Result (µg/l)
Groundwater		
Benzo(a)pyrene	CP201	0.05
Fluoranthene	CP202	0.05

9.2 2022 Ground Investigation

9.2.1 A ground investigation at the site was undertaken by E3P in March 2022. A copy of the ground investigation report is included in Appendix D3.

9.2.2 The ground investigation included the following:

- 40 Mechanically Excavated Trial Pits
- 35 Window Sample Boreholes
- 5 Soakaway Testing
- 10 Cable Percussive Boreholes; and
- Construction of 16 Environmental Monitoring Installations

9.2.3 The ground investigations included analysis for biocides, TPH, VOCs and SVOCs.

9.2.4 The ground investigation concluded that elevated chromium, copper, nickel and selenium were recorded in the chemical analysis of the groundwater at the site.

9.3 Further Intrusive Investigations

9.3.1 Due to the proposed quantities of hazardous substances present at the site, the impermeable surface and sealed drainage proposed as well as the operational procedures in place for material acceptance, storage and inspections, the risk of potential contamination is minimised.

9.3.2 The risk assessment and remedial strategy for the site identified no sources of contamination at the site.

10 STAGE 8 – PRODUCE A BASELINE REPORT

10.1.1 Details provided in Sections 1-7 include information on potential contaminant sources on site. The information from the ground investigations taken at the site in 2018 and March 2022 will be used as baseline data for the site.

11 OPERATION SITE CONDITION REPORT

11.1 Operational Phase

11.1.1 This section sets out the information that will be gathered during the operational phase of the facility relevant to the condition of the site.

11.2 Site Condition Report Summary

4.0 Changes to the activity	
Have there been any changes to the activity boundary? If yes, provide a plan showing the changes to the activity boundary.	If yes, provide a plan showing the changes to the activity boundary.
Have there been any changes to the permitted activities? If yes, provide a description of the changes to the permitted activities	If yes, provide a description of the changes to the permitted activities
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities? If yes, list them	If yes, list them
Checklist of supporting information	1. Plan showing any changes to the boundary (where relevant) 2. Description of the changes to the permitted activities (where relevant) 3. List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant)

5.0 Measures taken to protect land	
Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can't, you need to collect land and/or groundwater data to assess whether the land has deteriorated.	
Checklist of supporting information	4. Inspection records and summary of findings of inspections for all pollution prevention measures 5. Records of maintenance, repair and replacement of pollution prevention measures

6.0 Pollution incidents that may have had an impact on land, and their remediation	
Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can't, you need to collect land and /or groundwater reference data to assess whether the land has deteriorated while you've been there.	
Checklist of supporting information	6. Records of pollution incidents that may have impacted on land 7. Records of their investigation and remediation

7.0 Soil gas and water quality monitoring (where undertaken)	
Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this.	
Checklist of supporting information	8. Description of soil gas and/or water monitoring undertaken 9. Monitoring results (including graphs)

12 SURRENDER SITE CONDITION REPORT

12.1.1 At permit surrender, the following sections of the SCR template (EPR H5) will be completed and submitted to the EA as part of the permit surrender application. Information that has been gathered over the lifetime of the Permit will be used to identify whether the land is in a satisfactory condition. If necessary, surrender reference data will be collected and remediation will be undertaken if required.

8.0 Decommissioning and removal of pollution risk	
Describe how the site was decommissioned. Demonstrate that all sources of pollution risk have been removed. Describe whether the decommissioning had any impact on the land. Outline how you investigated and remedied this.	
Checklist of supporting information	10. Site closure plan 11. List of potential sources of pollution risk 12. Investigation and remediation reports (where relevant)

9.0 Reference data and remediation (where relevant)	
Say whether you had to collect land and/or groundwater data. Or say that you didn't need to because the information from sections 3, 4, 5 and 6 of the Surrender Site Condition Report shows that the land has not deteriorated. If you did collect land and/or groundwater reference data, summarise what this entailed, and what your data found. Say whether the data shows that the condition of the land has deteriorated, or whether the land at the site is in a "satisfactory state". If it isn't, summarise what you did to remedy this. Confirm that the land is now in a "satisfactory state" at surrender.	
Checklist of supporting information	13. Land and/or groundwater data collected at application (if collected) 14. Land and/or groundwater data collected at surrender (where needed) 15. Assessment of satisfactory state 16. Remediation and verification reports (where undertaken)

10.0 Statement of site condition
Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that: 17. the permitted activities have stopped 18. decommissioning is complete, and the pollution risk has been removed 19. the land is in a satisfactory condition

13 CONCLUSIONS

13.1.1 RPS has undertaken an assessment of the site condition at Unit C, The Airfields Roadside and Retail, Northern Gateway in support of an environmental permit application. The primary purpose of this report is to provide information to the EA in relation to the permit application and to provide them with a consolidated framework against which the potential future contamination issues will be assessed.

13.1.2 The published geology of the area indicates that the site is underlain by Tidal Flat Deposits and the Pennine Lower and Middle Coal Measures. These are classified as Secondary A Aquifers. A ground investigation undertaken by JPG in 2018 identified Made Ground to be present across the site as a reworked topsoil. Shallow groundwater was identified underneath the site during the 2018 site investigation at approximately 1.80 metres below ground level. In the 2022 site investigation, it was found between 0.5 – 1.5 metres.

13.1.3 Due to the control measures in place, containment infrastructure, quantities of hazardous substances to be stored and management systems to be implemented prior to operation of the paper mill, no relevant hazardous substances have been identified.

13.1.4 All the identified hazardous substances will be stored on impermeable surfaces that will be maintained in a good state of repair and the site will also operate appropriate procedures to inspect the stored hazardous substances for leaks and spillages. All tanks will be bunded and smaller storage containers located on drip trays. On this basis, the presence of these hazardous substances is not considered to be a concern for the facility and the risk of potential future contamination is minimised.

13.1.5 The site has historically been an airfield and no contamination sources have been identified on site. Adjacent potentially contaminative site uses of surrounding land include former an RAF maintenance unit and separately permitted activities.

13.1.6 The 2022 ground investigation concluded that elevated chromium, copper, nickel and selenium were recorded in the chemical analysis of the groundwater at the site.

13.1.7 Based on the operational procedures in place (including EMS and compliance procedures to be implemented), the proposed site operations should not lead to deterioration of the condition of the land.

REFERENCES

1 - https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32010L0075&from=EN

2 - https://echa.europa.eu/

3 – Environment Agency, H5 Guidance for Applicants, Environmental Permitting Regulations, Site Condition Report – Guidance and Templates, May 2013

Appendices

Appendix D 1

Site Plans

Appendix D 2

Raw Materials & Safety Data Sheets

Appendix D 3

Ground Investigations