

ENVIRONMENTAL RISK ASSESSMENT

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

JER9156
Environmental Risk
Assessment
2
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REPORT

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Contents

1	INTRODUCTION	1
2	SITE DETAILS.....	2
2.1	The Site	2
2.2	Surrounding Area	2
2.3	Sensitive Receptors	2
3	ENVIRONMENTAL RISKS AND EFFECTS	4
4	EMISSIONS TO SURFACE WATER.....	15
4.2	Surface water runoff	15
4.3	Process Water Discharge.....	15
5	EMISSIONS TO AIR.....	16
5.1	Introduction	16
5.2	Release points to Air	16
5.3	H1 Screening Assessment	18
5.4	Photochemical Ozone Creation Potential.....	20
5.5	Global Warming Potential.....	20
6	CONCLUSIONS	21

Tables

Table 2.1: Sensitive Receptors.....	2
Table 3.1: Risk Matrix	5
Table 3.2: Odour risk assessment and management plan.....	6
Table 3.3: Noise and vibration risk assessment and management plan	8
Table 3.4: Fugitive emissions risk assessment and management plan.....	10
Table 3.5: Visible Emissions	12
Table 3.6: Accident risk assessment and management plan.....	13

Figures

Figure 5.1: Air Release Points.....	17
Figure 5.2: Air Emissions Inventory	18
Figure 5.3: Stage One Assessment.....	19
Figure 5.4: Stage Two Assessment.....	20

Appendices

Appendix C1 H1 Emissions to Air

1 INTRODUCTION

- 1.1.1 This Environmental Risk Assessment (ERA) has been prepared to support the application to permit the operation of a paper processing mill facility, under the Environmental Permitting Regulations 2016 (as amended)¹. The applicant and operator of the ICT UK Paper Mill is Industri Cartarie Tronchetti (ICT) UK Limited.
- 1.1.2 It provides a qualitative assessment of the risk to the environment and human health from the operation of a new CHP, boiler plant and water treatment plant to be installed on the site, as well as for storage and use of raw materials associated with the permitted activities and the processing activities involved in the manufacture of tissue paper.
- 1.1.3 Natural Resources Wales (NRW) has adopted the Environment Agency (EA) Risk assessments for specific activities: environmental permits². Those aspects relevant to the operation of the ICT paper mill facility are covered within the following sections:
- Section 2 identifies sensitive receptors in proximity to the facility.
 - Section 3 provides the environmental risk assessment of ~~A~~Amenity and Accidents~~q~~hazards associated with the variation.
 - Point source emissions to air and water associated with the proposed facility have been assessed using the EA risk assessment guidance, which can be found in Appendix A to this ERA. A summary of the assessments of point source emissions to air and water is provided in Sections 4 and 5.

¹ The Environmental Permitting (England and Wales) Regulations, 2016.

² <https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmental-permits>

2 SITE DETAILS

2.1 The Site

- 2.1.1 The site address is Land off Welsh Road, Northern Gateway, Deeside, CH5 2NL.
- 2.1.2 The National Grid Reference for the facility is SJ 32056 69754
- 2.1.3 The area of the site is 23.86 hectares and is currently comprises an undeveloped parcel of agricultural land.

2.2 Surrounding Area

- 2.2.1 The Site is located on the western edge of Garden City, a village within the Sealand area of Flintshire. Residential properties at Garden City are approximately 375m to the south-east
- 2.2.2 Beyond the western boundary of the site and the railway line is the Tata Steel Shotton site. North of the ICT UK Paper Mill site is Deeside Industrial Park (DIP) which comprises a large number of distribution and manufacturing units.
- 2.2.3 Beyond the south-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.
- 2.2.4 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.

2.3 Sensitive Receptors

- 2.3.1 The closest residential properties are at Garden City which is approximately 375m to the south-east
- 2.3.2 The Dee Estuary is located immediately south of the site boundary.
- 2.3.3 The ICT UK Paper Mill site lies in proximity to several ecologically sensitive areas as detailed in Table 2.1 below:

Table 2.1: Sensitive Receptors

Site Type	Site Name
Within 2km:	
Ramsar	The Dee Estuary
Special Areas of Conservation (SAC)	River Dee and Bala Lake
	The Dee Estuary
	Deeside and Buckley Newt sites
Special Protection Areas	The Dee Estuary
Sites of Special Scientific Interest (SSSI)	Afon Dyfrdwy (River Dee)
	Connah's Quay Ponds and Woodland
	Dee Estuary / Aber Dyfrdwy
	Shotton Lagoons and Reedbeds
Local Wildlife Site:	River Dee Local Wildlife Site
Within 10km:	
Special Areas of Conservation (SAC)	Halkyn Mountain / Mynydd Helygain

REPORT

Sites of Special Scientific Interest (SSSI)	Hallwood Farm Marl Pit
	Inner Marsh Farm
	Buckley Claypits and Commons
	Mynydd Y Fflint / Flint Mountain
	Maes Y Grug
Local Nature Reserves	Comin Helygain A Glaswell Tiroedd Treffynnon / Halkyn Common and Holywell Grasslands
	Burton Mill Wood
	Whitby Park
	Stanney Wood
	Rivacre Valley

3 ENVIRONMENTAL RISKS AND EFFECTS

- 3.1.1** This section provides an assessment of risks to environmental amenity and from accidents that could arise from operation of the facility. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit.
- 3.1.2** The scope of the assessment has covered the following aspects:
- odour;
 - noise and vibration;
 - fugitive emissions;
 - visible emissions; and
 - accidents.
- 3.1.3** For each of the above, the approach to the assessment has followed the following six stage process:
- identify and consider risks for the site, and the sources of the risks;
 - identify the receptors at risk;
 - identify the possible pathways from the sources of the risks to the receptors;
 - assess risks relevant to the activity;
 - choose appropriate further measures to control these risks (if required); and
 - submit the assessment of overall risk.
- 3.1.4** Results of the assessment are provided in the following tables:
- Table 3.2 Assessment of odour risks
 - Table 3.3 Assessment of noise and vibration risks
 - Table 3.4 Assessment of fugitive emission risks
 - Table 3.5 Visible emissions
 - Table 3.6 Accidents risk assessment and management plan
- 3.1.5** The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:
- the probability of exposure; and
 - the consequence of the hazard to the environment or human health.
- 3.1.6** The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3.1 below:

Table 3.1: Risk Matrix

Consequence of the hazard to the environment or human health	Probability of Exposure			
	High	Medium	Low	Very Low
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

- 3.1.7 In completing the assessment, the proposed prevention and control measures are assumed to be in place. Where relevant, details of these measures are identified within the assessment.

REPORT

Table 3.2: Odour risk assessment and management plan

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs . who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Odour emissions from the permitted activities	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north. Tata Steel Shotton site approximately 750m to the west.	Air	The main source of odour would potentially be from the wastewater treatment plant (WTP) which is located within an enclosed building to the north of the main production buildings. The wastewater requiring treatment is considered to have a low potential for generating odour. not from an overly odorous source. The WWTP will be located away from sensitive receptors with tall buildings located in between. There will be embedded mitigation in place at the wastewater treatment plant, such as closed primary and biological sludge tanks, deodorized with activated carbon. A review of any associated odour issues at other ICT paper mills operating the same processes has been undertaken and it is noted that odour issues associated with the proposed facility are unlikely based on the processes and evidence of other operational sites. A complaints procedure will be put in place and in the unlikely event of a complaint, the incident will be investigated and recorded in line with this procedure. An odour assessment has been undertaken for the facility and is included in Appendix G of the main	Low	Low . Minor nuisance	Low

REPORT

			permit application; this assessment concluded that the likely impacts from odour would be negligible.			
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Table 3.3: Noise and vibration risk assessment and management plan

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs . who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Noise from the installation (including all production plant, deliveries, offloading and loading)	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north. Tata Steel Shotton site approximately 750m to the west.	Air	All operations will take place within a building which will reduce the potential for external noise nuisance. The buildings will be designed to minimise noise impacts. Building doors and openings will be kept closed at all times possible to minimise any noise penetration from within. All stacks will be designed to discharge vertically and the resultant benefits of acoustic directivity losses at nearby noise-sensitive receptors has been considered within the 3D noise modelling process. Stacks will also have silencers fitted to minimise noise. Potential noise sources will be located so as to minimise impacts on identified receptors. Staff will be trained to report any abnormal noise or vibration issues to management. A complaints procedure will be put in place and in the unlikely event of a complaint, the incident will be investigated and recorded in line with this procedure. A noise impact assessment has been undertaken and is included in Appendix H of the main permit application. This concluded that noise impacts from the operation of the	Low	Low . Minor nuisance	Low

REPORT

			paper mill are considered not significant.			
Vibration from the plant	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north. Tata Steel Shotton site approximately 750m to the west.	Land	Vibration has been assessed as part of the noise and vibration assessment included in Appendix H of the main permit application. This has considered the mitigation in place that all processes will take place in buildings and concluded that significant vibration effects are not anticipated. A complaints procedure will be put in place and in the unlikely event of a complaint, the incident will be investigated and recorded in line with this procedure.	Very Low	Very Low . Minor nuisance	Very Low

REPORT

Table 3.4: Fugitive emissions risk assessment and management plan

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs . who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Chemicals storage including deliveries	Local Watercourses (River Dee, Shotwick Brook)	Water / Drainage System	<p>The site design has included dedicated secure chemical storage areas which will be provided with appropriate containment measures and set on impermeable surfaces with sealed drainage. Any containers larger than 1m³ will be provided with spill trays with larger containers being stored within bunded areas.</p> <p>Buildings will have impermeable flooring and there will be spill kits located at strategic points around the facility.</p> <p>Maximum container size will be 35 m³ for the wet strength resin.</p> <p>A spillage procedure will be included as part of the management system procedures and will ensure that staff are appropriately trained so to ensure that any risk from spillages is minimised, and they are cleaned up as soon as detected.</p>	Low	High - Contamination of surface water bodies and groundwater.	Low
Oil / diesel storage . Spillage or Contaminated run-off	Local Watercourses (River Dee, Shotwick Brook)	Water / Drainage System	<p>The site design has included dedicated secure storage areas which will be provided with appropriate containment measures and set on impermeable surfaces with sealed drainage.</p> <p>Buildings will have impermeable flooring and there will be spill kits located at strategic points around the facility.</p> <p>Oils will be stored within a bunded area which are designed to meet the requirements of the Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations 2016 (i.e capable of storing at least 110% of the largest tank or at least 25% of the total storage capacity, whichever is the greater).</p> <p>The 2,000-litre diesel tank will be located close to the emergency generator within a bunded area on impermeable surface.</p> <p>A spillage procedure will be included as part of the management system procedures and will ensure that staff are appropriately trained so to ensure that any risk from spillages is minimised and they are cleaned up as soon as detected.</p>	Low	High - Contamination of surface water bodies and groundwater.	Low

REPORT

Contaminated rainwater collected within bunds	Local Watercourses (River Dee, Shotwick Brook)	Water / Drainage System	Bunds will be checked regularly for any build-up of rainwater within the bund. If any water build up is identified, it will be checked to see if contaminated and actioned for removal following site procedures to a permitted facility if required. If any leaks are detected, it will be cleaned up using site spill kits, following the spillage procedure and actions taken to stop the leak. Tanks and bunds will be routinely inspected to visually check their integrity.	Very Low	Low . Minor contamination of surface water bodies and groundwater.	Very Low
VOCs from delivery and storage of oils	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north. Tata Steel Shotton site approximately 750m to the west.	Air	Delivery vehicles will off load using sealed connections and will be overseen by a trained and qualified member of staff. Spill kits will be available nearby to delivery areas. Deliveries will be periodic therefore potential VOC emissions will be kept to a minimum.	Very Low	Low . minor nuisance	Very Low
Dust from outside operational areas	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north. Tata Steel Shotton site approximately 750m to the west.	Air	All processes with the potential to cause dust emissions will be undertaken within buildings. Doors and openings of buildings will be kept closed at all times possible except when in use. A dust abatement system will be fitted to the building extraction, this will comprise bag filters and a wet scrubber system. A daily visual check of outside areas will check for dust levels and all staff shall be trained to report any dust issues to management. The site will maintain a high standard of housekeeping which will minimise potential dust emissions from the site.	Low	Low . Minor dust nuisance	Low

REPORT

Table 3.5: Visible Emissions

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs . who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Plume from emission stacks	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north. Tata Steel Shotton site approximately 750m to the west.	Visual	Plume temperatures will range from 120°C for the gas boilers to 519°C for the cogeneration by-pass stacks. At these temperatures, it is unlikely that visible emissions occur apart from the infrequent start-up and shut-down periods	Very Low	Very Low . Minor visual disturbance	Very Low

REPORT

Table 3.6: Accident risk assessment and management plan

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs . who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Operator error	Air/Water/Land	Variable - dependent on nature of the error	Automatic control systems will be in place to control the operation of the papermaking operations and associated utilities. Alarms will alert the operator to potential operational problems and where relevant will be triggered with sufficient safety margin to permit operator intervention. A procedure of the actions to take should alarms be triggered will be developed as part of the site management systems before commissioning of the plant. All operational staff will be fully trained against the site operating procedures which include procedures to follow in the event of an abnormal event. Training will include raising awareness of key plant parameters and the potential implications of failure to control operations as designed and the associated potential impact on the environment.	Low	Variable depending upon nature of incident	Low
Loss of power	None	N/A	Key plant will employ control systems which will identify any loss of power. In the event of a loss of power to the site, the back-up emergency diesel generators will automatically provide backup power until normal power is resumed. This will be used mainly to power critical systems, but in case of unexpected shut down it can power equipment for a safely shut down. Plant will have safe automatic shutdown procedures	N/A	N/A	N/A
Fire/explosion or failure to contain firewater.	Residential properties at Garden City approximately 375m to the south-east Deeside Industrial Park approximately 200m to the north.	Air / Water / Land	Fire alarms, detection/suppression systems will be installed in the building. Staff will be trained in emergency fire procedures and actions to take in the event of a fire at the site. Drainage systems will be designed to contain fire water in the event of a fire at the site using shut-off valves. The site will be designed to be self-protected through the surfacing acting as bunded containment for firewater run-off. The quantity of firewater retention will be the same as the quantity of water stored in the fire tanks. Firewater run-off from jumbo rolls and pulp storage will be kept on site using shut-off valves in the drainage systems.	Low	Medium . Short-term impact on local air quality Pollution of surface water and/or groundwater.	Low

REPORT

	Tata Steel Shotton site approximately 750m to the west. Local Watercourses (River Dee, Shotwick Brook)					
Flooding	Local Watercourses (River Dee, Shotwick Brook)	Water / Drainage System	<p>According to the NRW Flood Risk Map, some areas of the Paper Mill site are located in an area of high risk of flooding. High means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%).</p> <p>The plant layout and storage facilities for raw materials and fuels will be designed to ensure all materials are contained and in the event of a flood, materials would not be released.</p> <p>As part of the site's emergency procedures, the appropriate procedures for responding to, reporting and investigation in the event of a flood will be included.</p> <p>The site has been designed to incorporate flood protection as detailed in the ES technical paper included in Appendix M of the main application.</p>	High	Medium - Pollution of surface water and/or groundwater.	Medium
Vandalism	Air/Water/Land	Variable - dependent on nature of the vandalism	<p>The site will be provided with external CCTV system consisting of several cameras which are installed along the buildings perimeter with the scope to have a continuous full view and control above the external areas of the site (internal roads, parking areas, access gates, etc.).</p> <p>The CCTV system will be continuously monitored (24/7) by a Security Guards service. The Security Guard service and the monitoring central of the CCTV system will be placed in a specific office placed in the Gatehouse building.</p> <p>The security in place at the site will minimise the likelihood of any potential trespassers and potential vandalism.</p>	Very Low	Variable depending upon nature of vandalism	Variable, depending on nature of vandalism

4 EMISSIONS TO SURFACE WATER

- 4.1.1 The effluent from the paper mill will be treated in the on-site wastewater treatment plant and discharged from a single outfall to the Dee Estuary.

4.2 Surface water runoff

- 4.2.1 Clean water from the building roofs, vehicle parking areas and other external areas will be managed through a SuDS based surface water management system which will capture surface water run-off in a series of swales and open channels prior to discharge into the Dee Estuary.
- 4.2.2 Class 1 full retention oil interceptors will be incorporated into the drainage design for run-off from car parks and lorry park areas prior to run-off entering the swale network.
- 4.2.3 As only clean, uncontaminated surface water is to be discharged from the facility, no further assessment of surface water has been included.

4.3 Process Water Discharge

- 4.3.1 The releases of treated process waters to the Dee Estuary have been assessed following the EA guidance - Surface water pollution risk assessment for your environmental permit³. The data input and assumptions underpinning the assessment are described below. A copy of the calculations and assessment can be found in Appendix B.
- 4.3.2 Following the three stages of H1 screening tests, the majority of parameters in the proposed discharge are screened out.
- 4.3.3 Three metals are not screened out at Test 3. However, there are only very marginal exceedances of the BC plus 10% EQS thresholds. Most of the measured discharge concentrations of these metals at the proxy site were below the LOD, therefore the values applied in the tests are an overestimation of their likely average discharge concentrations. Also, the assessment has been undertaken for a Q95 river flow condition.
- 4.3.4 When taking these factors into account, it is concluded that, even during low tide and low river flow conditions, the proposed paper mill discharge would not result in unacceptable water quality impacts within the receiving water.

³ <https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit>

5 EMISSIONS TO AIR

5.1 Introduction

- 5.1.1 This section provides the relevant screening assessments of point source emissions to air that could arise from operation of the facility. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit.
- 5.1.2 The scope of the assessment has covered the following aspects:
- Release point characteristics;
 - Air emissions inventory and mass flows;
 - Emissions screening for further assessment;
 - Photochemical Ozone Creation Potential (POCP).
- 5.1.3 The H1 software output tables are detailed below.

5.2 Release points to Air

- 5.2.1 Point source emissions will be from the CHP plant, boilers, diesel generator and dust management systems. The emissions from the CHP plant main stack and by-pass stacks will be from 30m stacks, the emissions from the boilers will be from 12.5 stacks. Emissions from the dust management system will range from 13m to 28.5m.
- 5.2.2 The H1 screening assessment has considered emissions of nitrogen dioxide and particulate matter. For the sake of the assessment, it is assumed that NO_x will be 100% nitrogen dioxide. All the combustion units on the site will fall under Medium Combustion Plant (MCP) for which NO_x is the primary emission from MCPs burning natural gas.
- 5.2.3 Figures 5.1 and 5.2 below show the emissions release points and the air emissions inventory for combustion products. Effective stack heights have been calculated and are included in the spreadsheet in Appendix A.
- 5.2.4 Estimated emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure. Environmental standards are based on statutory air quality limits where available, and upon human health protection environmental assessment levels (EALs) as given in EA risk assessment guidance.

Figure 5.1: Air Release Points

Air Release Points						
Please define your Release Points for Releases to Air						
Are there any Air emissions?				Yes <input type="checkbox"/>	Click the Add button below	
Number	Description	Location or Grid Reference	Activity or Activities	Effective Height metres	Efflux Velocity m/s	Total Flow m3/hr
e.g. A1		North stack		150	25	5,000
1	A1	Phase 1 - CV1/E1	Boiler 1	0	4.02	3312
2	A2	Phase 1 - CV1/E2	Boiler 2	0	4.02	3312
3	A3	Phase 1 - CV1/E12	Trimming presses	0	15.47	28000
4	A4	Phase 1 - CV1/E4	Dust Removal System 1	12.12	14.74	60000
5	A5	Phase 1 - CV1/E5	Dust Removal System 2	12.12	14.74	60000
6	A6	Phase 1 - CV1/E6	Dust Removal System 3	12.12	14.74	60000
7	A7	Phase 1 - CV1/E7	Dust Removal System 4	12.12	14.74	60000
8	A8	Phase 1 - CV1/E8	Dust Removal System 5	12.12	14.74	60000
9	A9	Phase 1 - CV1/E9	Dust Removal System 6	12.12	14.74	60000
10	A10	Phase 1 - CV1/E10	Dust Removal System 7	12.12	14.74	60000
11	A11	Phase 1 - CV1/E11	Dust Removal System 8	12.12	14.74	60000
12	A12	Phase 1 - PM1/E3	Cogeneration By-pass Stack	25.398	24.02	220000
13	A13	Phase 1 - PM1/E10	Cogeneration Main Stack	25.398	19.65	180000
14	A14	Phase 1 - PM1/E15	Dust Rem. System	22.91	7.25	82000
15	A15	Phase 1 - PM1/E16	Trimming silos	8.8	13.75	3500
16	A16	Phase 1 - RW1/E36	Dust Removal System	15.44	6.55	60000
17	A17	Phase 2 - PM2/E3	Cogeneration By-pass Stack	27.058	24.02	220000
18	A18	Phase 2 - PM2/E10	Cogeneration Main Stack	27.058	19.65	180000
19	A19	Phase 2 - PM2/E15	Dust Removal System	24.57	7.25	82000
20	A20	Phase 2 - PM2/E16	Trimming Silos	10.46	13.75	3500
21	A21	Phase 3 - CV3/E1	Boiler 3	0	4.02	2300
22	A22	Phase 3 - CV3/E2	Boiler 4	0	4.02	2300
23	A23	Phase 3 - CV3/E4	Dust Removal System 9	3.32	14.74	60000
24	A24	Phase 3 - CV3/E5	Dust Removal System 10	3.32	14.74	60000
25	A25	Phase 3 - CV3/E6	Dust Removal System 11	3.32	14.74	60000
26	A26	Phase 3 - CV3/E7	Dust Removal System 12	3.32	14.74	60000
27	A27	Phase 3 - CV3/E8	Dust Removal System 13	3.32	14.74	60000
28	A28	Phase 3 - CV3/E9	Dust Removal System 14	3.32	14.74	60000
29	A29	Phase 3 - CV3/E10	Dust Removal System 15	3.32	14.74	60000
30	A30	Phase 3 - CV3/E11	Dust Removal System 16	3.32	14.74	60000
31	A31	Phase 3 - CV3/E12	Trimming Presses	0	15.47	28000
32	A32	Phase 3 - PM3/E3	Cogeneration By-pass Stack	16.6	24.02	220000
33	A33	Phase 3 - PM3/E10	Cogeneration Main Stack	16.6	19.65	180000
34	A34	Phase 3 - PM3/E15	Dust Removal System	14.11	7.25	82000
35	A35	Phase 3 - PM3/E16	Trimming Silos	0	13.75	3500

Figure 5.2: Air Emissions Inventory

Air Emissions Inventory									
Please list all Substances released to Air for each Release Point identified in the previous page.									
Number	Substance	Meas'ment Method	Operating Mode (% of Year)	Data relating to Long Term effects			Data relating to Short Term effects		
				Conc. mg/m3	Release Rate g/s	Meas'ment Basis	Conc. mg/m3	Release Rate g/s	Meas'ment Basis
e.g.	sulphur dioxide	Estimated*	70% load	1510	3000	annual avg	1510	3000	hourly avg
1	Nitrogen Dioxide	Estimate	58.0%	100.0	0.092000	annual avg	100.0	0.092000	24 hour mean
1	Nitrogen Dioxide	Estimate	58.0%	100.0	0.092000	annual avg	100.0	0.092000	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.077778	annual avg	10.0	0.077778	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Nitrogen Dioxide	Estimate	2.0%	50.0	3.055556	annual avg	50.0	3.055556	24 hour mean
1	Nitrogen Dioxide	Estimate	97.0%	50.0	2.500000	annual avg	50.0	2.500000	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	100.0%	5.0	0.113889	annual avg	5.0	0.113889	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	100.0%	10.0	0.009722	annual avg	10.0	0.009722	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	5.0	0.083333	annual avg	5.0	0.083333	24 hr Mean
1	Nitrogen Dioxide	Estimate	2.0%	50.0	3.055556	annual avg	50.0	3.055556	24 hour mean
1	Nitrogen Dioxide	Estimate	97.0%	50.0	2.500000	annual avg	50.0	2.500000	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	100.0%	5.0	0.113889	annual avg	5.0	0.113889	24 hour mean
1	Particulates (PM10) (24 hr Mean)	Estimate	100.0%	10.0	0.009722	annual avg	10.0	0.009722	24 hr Mean
1	Nitrogen Dioxide	Estimate	58.0%	100.0	0.063889	annual avg	100.0	0.063889	24 hour mean
1	Nitrogen Dioxide	Estimate	58.0%	100.0	0.063889	annual avg	100.0	0.063889	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	71.0%	10.0	0.166667	annual avg	10.0	0.166667	24 hour mean
1	Particulates (PM10) (24 hr Mean)	Estimate	71.0%	10.0	0.077778	annual avg	10.0	0.077778	24 hr Mean
1	Nitrogen Dioxide	Estimate	2.0%	50.0	3.055556	annual avg	50.0	3.055556	24 hour mean
1	Nitrogen Dioxide	Estimate	97.0%	50.0	2.500000	annual avg	50.0	2.500000	24 hr mean
1	Particulates (PM10) (Annual Mean)	Estimate	100.0%	5.0	0.113889	annual avg	5.0	0.113889	24 hour mean
1	Particulates (PM10) (Annual Mean)	Estimate	100.0%	10.0	0.009722	annual avg	10.0	0.009722	24 hr Mean

5.3 H1 Screening Assessment

5.3.1 Emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure. Environmental standards are based on statutory air quality

limits where available, and upon human health protection environmental assessment levels (EALs) as given in H1 guidance.

5.3.2 EA guidance states that emissions can be screened out as insignificant where:

- Long term PC < 1% of EAL
- Short term PC < 10% of EAL

5.3.3 Process contributions (PCs) have been calculated using atmospheric dispersion modelling, details of which are given in Appendix E of the main application supporting information. PCs which are lower than 1% of the relevant emissions standard for long-term exposure and lower than 10% of the relevant limit for short-term exposure are screened out as insignificant. Modelled process concentrations have been included based on the data presented in the Air Quality Assessment (Appendix E of the main application supporting information).

5.3.4 Figure 5.3 below shows the calculated process contributions (PCs) based on the emissions from the site as a proportion of the EAL or EQS.

Figure 5.3: Stage One Assessment

Air Impact Screening Stage One								
Screen out Insignificant Emissions to Air								
This page displays the Process Contribution as a proportion of the EAL or EQS. Emissions with PCs that are less than the criteria indicated may be screened from further assessment as they are likely to have an insignificant impact.								
Number	Substance	Long Term EAL	Short Term EAL	Long Term		> 1% of EAL?	Short Term	
		µg/m3	µg/m3	PC	% PC of EAL		PC	% PC of EAL
1	Particulates (PM10) (40.0	-	143	357	Yes	4,841	-
1	Particulates (PM10) (-	50.0	8.48	-		309	618
1	Nitrogen Dioxide	40.0	200	75.3	188	Yes	4,109	2,055

5.3.5 Figure 5.4 below shows the predicted environmental concentration (PEC) which is the PC in relation to the background pollutant levels and the EAL or EQS.

5.3.6 The second stage of the screening assessment compares the PEC against EALs. The background concentration for pollutants is taken from the air quality assessment, details of which are given in Appendix E of the main application. The results suggest there is a need for further assessment of nitrogen dioxide and particulate matter. Detailed modelling has been carried out for these species, and the assessments are given in Appendix E of the main permit application.

Figure 5.4: Stage Two Assessment

Air Impact Modelling Stage Two Screening									
Identify need for Detailed Modelling of Emissions to Air									
This page displays the Process Contributions in relation to the background pollutant levels and the EAL or EQS. You should use this information to decide whether to conduct detailed modelling. Note that releases that are insignificant are not shown as they are screened from further assessment. Also complete this page if you have already done detailed modelling.									
Number	Substance	Air Bkgrnd Conc. µg/m3	Long Term				Short Term		
			PC µg/m3	% PC of headroom (EAL - Bkgrnd)	PEC mg/m3	% PEC of EAL %	PC µg/m3	% PC of headroom (EAL - Bkgrnd)	% PC of headroom >=20?
		e.g. 12							
1	Particulates (PM10) (Annual Mean)	9.69	143	471	152	381	Yes	4,841	-
1	Particulates (PM10) (24 hr Mean)	9.69	8.48	-	0	-		309	1,008
1	Nitrogen Dioxide	8.69	75.3	240	84.0	210	Yes	4,109	2,250

5.4 Photochemical Ozone Creation Potential

- 5.4.1 The photochemical ozone creation potential (POCP) has been calculated. Nitrogen dioxide emitted to air by the facility is identified as having the potential to form ozone. The total POCP score for the facility is calculated as 674.54.
- 5.4.2 The main permit application details the proposed measures for preventing and minimising the release of these pollutants and concludes that the proposed measures are BAT.

5.5 Global Warming Potential

- 5.5.1 The global warming potential (GWP) has been calculated in accordance with the H1 guidance. The GWP score of 47,006.72 comprised the gas usage from the CHP plant, burners and boilers along with indirect emissions from imported electricity from the National Grid.
- 5.5.2 Carbon dioxide emissions from the onsite combustion plant are by far the most significant. There may be some additional emissions with global warming potential from the diesel for emergency generators, however, as these are likely to be less than 50 hours per year, this has not been included in the assessment.
- 5.5.3 Further assessment against the BAT conclusions documents can be found in section 6 of the application supporting information.

6 CONCLUSIONS

- 6.1.1 The following hazards from the operation of the proposed facility have been assessed:
- odour;
 - noise and vibration;
 - fugitive emissions;
 - visible plumes; and
 - accidents.
- 6.1.2 The assessment has concluded that the overall risks associated with the identified hazards, including the proposed management measures are low to very low.
- 6.1.3 The H1 risk assessment software tool has been used to support this Environmental Risk Assessment in respect of emissions to air, POCP and GWP. The completed H1 software can be found within the Appendix C1 to this Environmental Risk Assessment.
- 6.1.4 The assessment concluded that further assessment of emissions to air was necessary. These assessments are provided in Appendix E of the main application.
- 6.1.5** The POCP for the installation is calculated as 674.54. The use of BAT minimises the POCP from the installation.
- 6.1.6 The total GWP score of 47,006.72 comprised the gas usage from the CHP plant, burners and boilers along with indirect emissions from imported electricity from the National Grid.
- 6.1.7 The assessment of emissions to water concluded that following the three stages of screening tests, the majority of parameters in the proposed discharge are screened out. These assessments are provided in Appendix F of the main application.
- 6.1.8 When taking these factors into account, it is concluded that, even during low tide and low river flow conditions, the proposed paper mill discharge would not result in unacceptable water quality impacts within the receiving water.
- 6.1.9 Overall, the risk assessment concludes that with the identified management measures in place, the hazards presented by the operation of the paper mill are not significant.



APPENDICES

Appendix C1

H1 Emissions to Air