

Decision document ANNEX 4:BAT Assessment

Contents

Waste Treatment.....2

Production of Paper, Pulp and Board 19

Large Combustion Plant.....39

Waste Treatment

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
OVERALL ENVIRONMENTAL PERFORMANCE		
1	Environment Management System (EMS) – <u>ALL</u> of the following:	
	I. Management commitment	Compliant - See BAT 1 for paper and pulp (as the primary activity)
	II. Environmental policy development including CI of performance	
	III. Planning and implementing procedures & targets in conjunction with financial planning & investment	
	Implementation of procedures	
	(a) Structure & responsibility	
	(b) Recruitment, training, awareness & competence	
	(c) Communication	
	(d) Employee involvement	
	IV. (e) Documentation	
	(f) Effective process control	
	(g) Maintenance programmes	
	(h) Emergency preparedness & response	
	(i) Safeguarding compliance with environmental legislation	
	V. Checking performance and taking corrective action	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
		(a) Monitoring & measurement	
		(b) Corrective and preventive action	
		(c) Maintenance of records	
		(d) Independent (where practicable) internal or external EMS auditing	
	VI.	Senior management review of EMS	Compliant- The operator has confirmed that the sector benchmarking and following cleaner technologies are implemented
	VII.	Following development of cleaner technologies	
	VIII.	Whole life cycle considerations when designing a new plant i.e. impacts from eventual decommissioning and throughout its operating life	
	IX.	Regular sectoral bench marking	
	X.	Waste stream management (BAT 2)	See BAT 2
	XI.	Inventory of wastewater & waste gas streams (BAT 3)	See BAT 3
	XII.	Residues Management Plan – S6.5	
	XIII.	Accident Management Plan – S6.5	Compliant - an accident management plan is to be implemented
	XIV.	Odour Management Plan (BAT 12)	See BAT 12
	XV.	Noise & Vibration Management Plan (BAT 17)	See BAT 17
2	Improving overall environmental performance – <u>ALL</u> of the following:		Compliant - the site applies a combination of BAT 2 – the site has waste acceptance procedure and will store and segregate waste appropriately. Wastes used for different processes are stored in separate dedicated areas (Old Corrugated Carboard (OCC), waste wood for biomass boiler)
	a.	Set up and implement waste characterisation & pre-acceptance procedures	
	b.	Set up and implement waste acceptance procedures	
	c.	Set up and implement a waste tracking system & inventory	
	d.	Set up and implement an output quality management system	

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	e.	Ensure waste segregation	
	f.	Ensure waste compatibility prior to mixing or blending	
	g.	Sort solid incoming waste – S6.4	
3	Establish and maintain a wastewater and waste gas inventory as part of the EMS - <u>ALL</u> of the following:		
	<i>Information on characteristics of waste and waste treatment processes</i>		
	(i)(a)	simplified process flow sheets showing emission sources	Compliant - the monitoring will be integrated into the site's environment management system
	(i)(b)	Process-integrated and wastewater/waste gas treatment descriptions including performance	
	<i>Information on characteristics of wastewater streams</i>		
	(ii)(a)	<i>Mean and variability of:</i>	Compliant - the monitoring will be integrated into the site's environment management system
		Flow	
		pH	
		Temperature	
		Conductivity	
	(ii)(b)	<i>Mean concentration, load and variability of:</i>	
		Total suspended solids	
		COD/TOC	
		Nitrogen species	
		Phosphorous	
		Metals	
		Priority substances/micropollutants	
		Any other relevant compounds	

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	(ii)(c)	Bioeliminability data (see BAT 52):		
		BOD		
		BOD to COD ratio		
		Zahn-Wellens test		
		Biological inhibition potential		
	Information on characteristics of waste gas streams			
	(iii)(a)	Mean and variability of:		Compliant - the monitoring will be integrated into the site's environment management system
		Flow		
		temperature		
	(iii)(b)	Mean concentration, load and variability of relevant substances:		
		Organic compounds		
		POPs e.g. PCBs		
		Any other relevant compounds		
	(iii)(c)	Flammability		
		Lower and Higher Explosive Limits		
		Reactivity		
	(iii)(d)	Presence of other substances that may affect the gas treatment system or plant safety:		
		O ₂		
		N ₂		
		Water vapour		
		Dust		
4	Reducing environmental risk associated with waste storage – ALL of the following:			

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	a.	Optimised storage location	Compliant - the waste storage arrangements have been optimised for the new process. Details on storage are discussed in main decision Document and Fire Prevention and Mitigation Plan
	b.	Adequate storage capacity	
	c.	Safe storage operation	
	d.	Separate area for storage & handling of packaged hazardous waste	
5	Set up and implement procedures to reduce the environmental risk associated with handling and transfer of waste - include following elements:		Improvement condition
	Carried out by competent staff		
	Duly documented, validated and verified		
	Spill prevention, detection and mitigation measures		
	Take precautions when mixing or blending wastes		
	Procedures are risk-based and consider likelihood of accidents, incidents and their environmental impact		
MONITORING			
6	Relevant emissions to water: monitor key process parameters at key locations		Compliant
	Key process parameters		
	Wastewater flow		
	pH		
	Temperature		

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	Conductivity		
	BOD		
	Other process parameters		
	Key monitoring locations		
	Pre-treatment inlet and/or outlet		
	Final treatment inlet		
	Discharge point (to the environment)		
	Other location		
7	Monitoring emissions to water (refer to table) Monitoring parameters depend on waste treatment process(es) involved		Compliant – Monitoring parameters set out in the permit in accordance to the parameters
8	Monitoring emissions to air (refer to table) Monitoring parameters depend on waste treatment process(es) involved		Not applicable – only channelled emission to air is via biogas engine combustion subject to monitoring requirements of the Medium Combustion Plant Directive
9	Monitoring diffuse emissions of organic compounds to air from processes involving solvents. Use one or a combination of the following:		
	a	Measurement – S6.2 descriptions	Not applicable
	b	Emissions factor calculation	
	c	Mass balance calculation	
10	Periodically monitor odour emissions where nuisance is expected and/or has been substantiated (monitoring frequency is outlined in BAT 12)		
	Use EN standards e.g. 13725 or 16841		Not Applicable – Low risk of odour emissions
	Use equivalent methods e.g. ISO / national / international monitoring standards		

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11	Annual monitoring for:		Compliant - the operator will monitor these processes.
	- Water, energy and raw materials		
	- Generation of residues and wastewater		
EMISSIONS TO AIR			
12	Set up, implement and review an Odour Management Plan (as part of the site EMS) where nuisance is expected and/or has been substantiated. Include <u>ALL</u> of the following:		
	Protocol containing actions and timelines		Not applicable
	Protocol for conducting odour monitoring (BAT 10)		
	Protocol for response to odour incidents/complaints		
	Odour prevention and reduction programme		
13	Techniques to prevent, or where not practicable reduce odour emissions. Use one or a combination of the following:		
	a.	Minimising residence times (open systems only)	13.b - the anaerobic digestion/ETP site will apply a desulphurisation plant to remove Hydrogen sulphide using a H ₂ S absorption and a bioreactor for production of elemental hydrogen
	b.	Use chemical treatment (N/A if desired output is hampered)	
	c.	Optimising aerobic treatment – see examples. Refer to BAT 36 for wastes other than water-based liquid waste.	
14	Techniques to prevent, or where not practicable reduce diffuse emissions to air, in particular of dust, organic compounds and odour. Use one or a combination of the following:		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
	a.	Minimising potential diffuse emission sources – see examples	Not applicable
	b.	Select and use high-integrity equipment – see examples	
	c.	Corrosion prevention – see examples	
	d.	Containment, collection and treatment of diffuse emissions – see examples	
	e.	Dampening (with water or fog)	
	f.	Maintenance – see examples	
	g.	Cleaning of waste treatment and storage areas – see examples	
	h.	Leak Detection And Repair (LDAR) programme for organics – S6.2	
15	Use flaring only for safety reasons or non-routine operating conditions (OTNOC). Use <u>both</u> of the following:		Compliant - flaring to be used for non-routine emergency operating conditions
	a.	Correct plant design – see examples	
	b.	Plant management including gas system balancing and advanced process control	
16	Reduce emissions to air when flaring is unavoidable. Use <u>both</u> of the following:		Compliant - flaring to be used for non-routine emergency operating conditions
	a.	Correct design of flaring devices – see examples	
	b.	Monitoring and recording as part of flare management – see examples	
NOISE AND VIBRATIONS			
17	Set up, implement, and regularly review a Noise and Vibration Management Plan (as part of the EMS) where nuisance is expected and/or has been substantiated. Include ALL of the following:		

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	I.	Protocol with actions and timelines	N/A – noise impact assessment has shown that the site has low risk of impact at nearest residential receptors.
	II.	Noise and vibration monitoring plan/protocol	
	III.	Noise & vibration complaint response plan/protocol	
	IV.	Noise and vibration reduction programme	
18	Techniques to prevent, or where not practicable reduce noise and vibration emissions. Use one or a combination of the following:		Compliant – new equipment will be Low noise equipment and located within building. Noise impact from site is low risk (see section in main decision document on noise impact assessment)
	a.	Appropriate location of equipment and buildings	
	b.	Operational measures – see examples	
	c.	Low-noise equipment – see examples	
	d.	Noise & vibration control equipment – see examples	
	e.	Noise attenuation – see examples	
EMISSIONS TO WATER			
19	Optimise water consumption, reduce wastewater generation and prevent or where not practicable reduce emissions to soil and water. Use one or a combination of the following:		Compliant – site has sealed drainage around the waste areas with segregated drainage for surface water and process water (19g). Separate drainage scheme (19e) The new effluent treatment plant will have containment measures that are aligned with the requirements of CIRIA 736. See section 9.3 of decision document for details
	a.	Water management – see examples	
	b.	Water recirculation	
	c.	Impermeable surface	
	d.	Reduce likelihood and impact of tank/vessel overflows and failures – see examples	
	e.	Roofing of waste storage and treatment areas	
	f.	Segregation of water streams (being mindful of existing plant constraints)	

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	g.	Adequate drainage infrastructure	
	h.	Design and maintenance provisions to allow risk-based leak detection and repair. Minimise use of underground components.	
	i.	Appropriate buffer storage capacity (being mindful of existing plant constraints)	
20	Treat wastewater using a combination of:		Compliant – The new effluent treatment plant will include Screening (c), Activated sludge process (l), Coagulations and flocculation (o), sedimentation (p) and floatation (r)
	Preliminary, primary and general treatment		
	a.	Equalisation	
	b.	Neutralisation	
	c.	Physical separation	
	Physico-chemical treatment		
	d.	Adsorption	
	e.	Distillation/rectification	
	f.	Precipitation	
	g.	Chemical oxidation	
	h.	Chemical reduction	
	i.	Evaporation	
	j.	Ion exchange	
	k.	Stripping	
	Biological treatment		
	l.	Activated sludge process	
	m.	Membrane bioreactor	
	Nitrogen removal		

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	n.	Nitrification/denitrification (where biological treatment used)		
	Solids removal			
	o.	Coagulation and flocculation		
	p.	Sedimentation		
	q.	Filtration (sand, micro, ultra)		
	r.	Flotation		
	BAT-AELs for DIRECT discharges to a receiving waterbody (mg/l) <i>Table 6.1 and its supporting notes. Monitoring requirements are outlined in BAT 7</i>			
	TOC	10.0-60 10-100 for water-based liquid waste	Compliant- Emission Limit set out in permit	
	COD (TOC is preferred)	30-180 30-300 for water-based liquid waste		
	Suspended solids	5.0-60		
	HOI	0.5-10 applying to specific waste treatments	Not applicable	
	Total N	1-25 for biological treatment and waste oil re-refining 10-60 for water-based liquid waste	Compliant-Emission limits set out in permit	
	Total P	0.3-2 for biological treatment 1-3 for water-based liquid waste		
	Phenol	0.05-0.2 for waste oil re-refining and physio-chemical treatment of waste with CV		

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		0.05-0.3 for water-based liquid waste	Compliant- Phenol and derivatives were reported through water framework directive reporting in the exiting permit. Phenol index added to the permit
	Free CN-	0.02-0.1 for water-based liquid waste	
	AOX	0.2-1 for water-based liquid waste	
	Metals & Metalloids – specific waste treatments as listed in Table 6.1		
	As	0.01-0.05	Not applicable
	Cd	0.01-0.05	
	Cr	0.01-0.15	
	Cu	0.05-0.5	
	Pb	0.05-0.1	
	Ni	0.05-0.5	
	Hg	0.5-5	
	Zn	0.1-1	
	Metals & Metalloids – treatment of water-based liquid waste		
	As	0.01-0.1	Compliant - emission limits set for metals (already permitted but not subject to emission limits)
	Cd	0.01-0.1	
	Cr	0.01-0.3	
	Hexavalent Cr [Cr(VI)]	0.01-0.1	
	Cu	0.05-0.5	

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
	Pb	0.05-0.3		
	Ni	0.05-1		
	Hg	1.0-10		
	Zn	0.1-2		
	BAT-AELs for INDIRECT discharges to a receiving waterbody (mg/l)			
	Table 6.2 and its supporting notes. Monitoring requirements are outlined in BAT 7			
	HOI	0.5-10 applying to specific waste treatments		Not applicable – no indirect discharge (direct discharge only)
	Free CN-	0.02-0.1 for water-based liquid waste		
	AOX	0.2-1 for water-based liquid waste		
	Metals & Metalloids – specific waste treatments as listed in Table 6.2			
	As	0.01-0.05		
	Cd	0.01-0.05		
	Cr	0.01-0.15		
	Cu	0.05-0.5		
	Pb	0.05-0.1		
	Ni	0.05-0.5		
	Hg	0.5-5		
	Zn	0.1-1		
	Metals & Metalloids – treatment of water-based liquid waste			
	As	0.01-0.1		
Cd	0.01-0.1			
Cr	0.01-0.3			

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
	Hexavalent Cr [Cr(VI)]	0.01-0.1	
	Cu	0.05-0.5	
	Pb	0.05-0.3	
	Ni	0.05-1	
	Hg	1.0-10	
	Zn	0.1-2	
EMISSIONS FROM ACCIDENTS AND INCIDENTS			
21	Techniques to prevent or limit the environmental consequences of accidents and incidents, as part of the Accident Management Plan. Use <u>ALL</u> of the following:		
	a.	Protection measures – see examples	Compliant – accident management plan for the new site is incorporated into the managements systems
	b.	Management of incidental or accidental emissions	
	c.	Incident/accident registration and assessment system – see examples	

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MATERIAL EFFICIENCY		
22	Use materials efficiently by substituting materials with waste e.g. waste acids/alkalis for pH adjustment, fly ashes for binders	Compliant- waste wood and ETP dewatered sludge are used as fuels for the Biomass combustion plant, displacing virgin fuel sources.
ENERGY EFFICIENCY		
23	Use energy efficiently by using <u>both</u> of the following techniques:	
	a.	Energy efficiency plan
	b.	Energy balance record
		Compliant – energy efficiency plan for the wider site including the two gas engines associated with the ETP.
REUSE OF PACKAGING		
24	Maximise the reuse of packaging as part of a Residues Management Plan (see BAT 1 XII.)	Compliant - wherever possible empty packaging will be returned for reuse
BIOLOGICAL TREATMENT OF WASTE (GENERAL BAT)		
33	Reduce odour emissions and improve overall environmental performance by selecting the waste input (to ensure its suitability for biological treatment). See also BAT 2	AD plant runs on paper sludge from the machine
34	Reduce emissions to air of dust, organic compounds and odorous compounds (including H ₂ S & NH ₃) by using one or a combination of the following techniques:	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
	a.	Adsorption – see S6.1	Compliant (d and e) – AD plant is equipped with H ₂ S scrubber units and the biogas is to be used with the biogas engines
	b.	Biofilter – see S6.1	
	c.	Fabric filter – see S6.1.	
	d.	Thermal oxidation – see S6.1	
	e.	Wet scrubbing – see S6.1	
	BAT-AEL for channelled NH₃, odour, dust and TVOC emissions to air from the biological treatment of waste (mg/Nm³) (ou_E/m³) <i>Table 6.7 and its supporting notes. Monitoring requirements are outlined in BAT 8</i>		
	NH ₃	0.3-20	-Not applicable
	Odour	200-1000	
	Dust	2.0-5.0	
	TVOC	5.0-40	
35	Reduce the generation of wastewater and reduce water usage by using <u>ALL</u> of the following:		Compliant -Applicant applies these techniques to the site.
	a.	Segregation of water streams (see also BAT 19f)	
	b.	Water recirculation	
	c.	Minimisation of the generation of leachate	
BIOLOGICAL TREATMENT OF WASTE: ANAEROBIC METHODS			
38	Reduce emissions to air and improve overall environmental performance by monitoring and/or controlling key waste and process parameters. Include following elements:		
	<i>Implement a manual and/or automatic monitoring system to:</i>		
	Ensure a stable digester operation		Compliant – Supervisory Control and Data Acquisition (SCADA) used on site. These techniques are integrated into the permit table S3.5c
	Minimise operational difficulties and associated odour emissions		
	Provide sufficient early warning of system failures		

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
	Windrow porosity, height and width	
	<i>Monitoring and/or control of key waste and process parameters – examples below:</i>	
	pH and alkalinity of the digester feed	Compliant – Supervisory Control and Data Acquisition (SCADA) used on site. These techniques are integrated into the permit table S3.5c
	Digester operating temperature	
	Hydraulic and organic loading rates of the digester feed	
	Volatile fatty acids and NH3 concentrations within digester & digestate	
	Biogas quantity, composition (e.g. H2S) and pressure	
	Liquid and foam levels in the digester	
BAT 39-53 Not Applicable		

Production of Paper, Pulp and Board

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 1. Environmental management system In order to improve the overall environmental performance of plants for the production of pulp, paper and board, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features: (a) commitment of the management, including senior management; (b) definition of an environmental policy that includes the continuous improvement of the installation by the management; (c) planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; (d) implementation of procedures paying particular attention to: (i) structure and responsibility (ii) training, awareness and competence	Compliant - applicant has an EMS (certified to ISO14001 (complies with BAT 1 a-f) that incorporates the aspects outline in BAT 1 including procedures for low carbon technologies BAT 1 g and sector benchmarking (BAT 1 i) against the confederation of paper industries (CPI) and sheet plant association.

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(iii) communication (iv) employee involvement (v) documentation (vi) efficient process control (vii) maintenance programmes (viii) emergency preparedness and response (ix) safeguarding compliance with environmental legislation (e) checking performance and taking corrective action, paying particular attention to: (i) monitoring and measurement (see also the Reference Document on the General Principles of Monitoring) (ii) corrective and preventive action (iii) maintenance of records (iv) independent (where practicable) internal and external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;	

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
(f) review of the EMS and its continuing suitability, adequacy and effectiveness by senior management; (g) following the development of cleaner technologies; (h) consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life; (i) application of sectoral benchmarking on a regular basis.	

BAT 2. BAT is to apply the principles of good housekeeping for minimising the environmental impact of the production process by using a combination of the techniques given below a. Careful selection and control of chemicals and additives b. Input-output analysis with a chemical inventory, including quantities and toxicological properties c. Minimise the use of chemicals to the minimum level required by the quality specifications of the final product d. Avoid the use of harmful substances (e.g. nonylphenol ethoxylate-containing dispersion or cleaning agents or surfactants) and substitution by less harmful alternatives e. Minimise the input of substances into the soil by leakage, aerial deposition and the inappropriate storage of raw materials, products or residues f. Establish a spill management programme and extend the containment of relevant sources, thus preventing the contamination of soil and groundwater g. Proper design of the piping and storage systems to keep the surfaces clean and to reduce the need for washing and cleaning	Compliant - the operator will use good housekeeping procedure to comply with 2a-e. BAT 2f – site has secondary and tertiary containment for the storage on chemicals for paper processing (see section 9.3 in main decision document for details).
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BAT 3. In order to reduce the release of not readily biodegradable organic chelating agents such as EDTA or DTPA from peroxide bleaching, BAT is to use a combination of the techniques given below. a. Determination of quantity of chelating agents released to the environment through periodic measurements Not applicable for mills that do not use chelating agents b. Process optimisation to reduce consumption and emission of not readily biodegradable chelating agents Not applicable for plants that eliminate 70 % or more of EDTA/DTPA in their wastewater treatment plant or process c. Preferential use of biodegradable or eliminable chelating agents, gradually phasing out non-degradable products	Not Applicable - no bleaching agents are use on site.

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Applicability depends on the availability of appropriate substitutes (biodegradable agents meeting e.g. brightness requirements of pulp)	
BAT 4. In order to reduce the generation and the pollution load of wastewater from wood storage and preparation, BAT is to use a combination of the techniques given.	Not applicable - waste wood not used in paper process
BAT 5. In order to reduce fresh water use and generation of waste water, BAT is to close the water system to the degree technically feasible in line with the pulp and paper grade manufactured by using a combination of the techniques given below a. Monitoring and optimising water usage b. Evaluation of water recirculation options c. Balancing the degree of closure of water circuits and potential drawbacks; adding additional equipment if necessary d. Separation of less contaminated sealing water from pumps for vacuum generation and reuse	Compliant – the operator has outlined the key process to reduce water consumption using a combination of BAT 5a-f

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e. Separation of clean cooling water from contaminated process water and reuse f. Reusing process water to substitute for fresh water (water recirculation and closing of water loops) <i>Applicable to new plants and major refurbishments. Applicability may be limited due to water quality and/or product quality requirements or due to technical constraints (such as precipitation/incrustation in water system) or increase odour nuisance</i> g. In-line treatment of (parts of) process water to improve water quality to allow for recirculation or reuse	
BAT 6. BAT is to reduce fuel and energy consumption in pulp and paper mills by using technique (a) and a combination of other techniques a. Use an energy management system that includes all of the following features: (i) Assessment of the mill's overall energy consumption and production (ii) Locating, quantifying and optimising the potentials for	Compliant - a (energy management system) b (energy by incinerating those wastes and residues) and c (combined heat and power) are applied on site.

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energy recovery (iii) Monitoring and safe guarding the optimised situation for energy consumption b. Recover energy by incinerating those wastes and residues from the production of pulp and paper that have high organic content and calorific value, taking into account BAT 12 c. Cover the steam and power demand of the production processes as far as possible by the cogeneration of heat and power (CHP) d. Use excess heat for the drying of biomass and sludge, to heat boiler feedwater and process water, to heat buildings, etc. e. Use thermo compressors f. Insulate steam and condensate pipe fittings g. Use energy efficient vacuum systems for dewatering h. Use high efficiency electrical motors, pumps and agitators i. se frequency inverters for fans, compressors and pumps	

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j. Match steam pressure levels with actual pressure needs	
BAT 7. BAT is to prevent and reduce the emission of odorous compounds originating from the wastewater system using a combination of techniques	Compliant - design of paper machine 3 and ETP (see WT BAT) minimises the likelihood of odorous compounds from waste water system
BAT 8. BAT is to monitor the key process parameters according to the table given in the BAT conclusions document	Compliant- key process monitoring to be carried out onsite
BAT 9. BAT is to carry out the monitoring and measurement of emissions to air, as indicated below, on a regular basis with the frequency indicated and according to EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards which	Compliant- monitoring for CHP, backup boiler and biogas engines is carried out in-line with the relevant regimes (MCPD and LCP BAT)

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
ensure the provision of data of an equivalent scientific quality.	
BAT 10. BAT is to carry out the monitoring of emissions to water as indicated in the table included in the BAT conclusions document with the indicated frequency according to EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	Compliant - monitoring already present in existing permit.
BAT 11. BAT is to regularly monitor and assess diffuse total reduced sulphur emissions from relevant sources.	Compliant - operating techniques and process controls (such as minimising retention time and good housekeeping, managing shutdowns and preventative maintenance programme) in place to minimise the likelihood of diffuse sulphur emissions from fibres. Measures are in place to monitor total sulphur emissions.
BAT 12. BAT is to implement a waste assessment (including waste inventories) and management system, so as to facilitate waste reuse, of failing that, waste recycling, or failing that, 'other recovery', including a combination of the techniques given.	Compliant – combination of BAT 12a, d and e are used on site.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
a) separate collection of different waste fractions (including separation and classification of hazardous waste) b) Merging of suitable fractions of residues to obtain mixtures that can be better utilised c) Pretreatment of process residues before reuse or recycling d) Material recovery and recycling of process residues on site e) Energy recovery on- or off-site from wastes with high organic content f) External material utilisation g) Pretreatment of waste before disposal	
BAT 13. In order to reduce nutrient (nitrogen and phosphorus) emissions into receiving waters, BAT is to substitute chemical additives with high nitrogen and phosphorus contents by additives containing low nitrogen and phosphorus contents.	Compliant – operator is to maintain a register of process chemicals and is to review the process to identify opportunities to reduce nutrient substances where possible.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 14. In order to reduce emissions of pollutants into receiving waters, BAT is to use all of the techniques given below a) Primary (physico-chemical) treatment b) Secondary (biological) treatment	Compliant - site uses clarifiers as primary (physical) and anaerobic digestion as secondary (biological).
BAT 15. When further removal of organic substances, nitrogen or phosphorus is needed, BAT is to use tertiary treatment as described in Section 1.7.2.2.	Not applicable – tertiary containment is applicable where relevant where primary and secondary is not sufficient to achieve tighter limits (see table 1.7.2.2 of BAT conclusions). ETP is designed to achieve the either existing permitted or tighter limits set out in accordance to the relevant BRef (for waste treatment and paper and pulp)
BAT 16. In order to reduce emissions of pollutants into receiving waters from biological waste water treatment plants, BAT is to use all of the techniques given below. a) Proper design and operation of the biological treatment plan b) Regularly controlling the active biomass	Compliant - all techniques a)-c) have been applied in the design of the new effluent treatment plant.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
c) Adjustment of nutrition supply (nitrogen and phosphorus) to the actual need of the active biomass	
BAT 17. In order to reduce the emissions of noise from pulp and paper manufacturing, BAT is to use a combination of the techniques given in the table included in the BAT conclusions document.	Compliant - the operator is to use low noise equipment located in-doors where possible. The noise impact assessment has concluded that low adverse impacts at the nearest residential receptors.
BAT 18. In order to prevent pollution risks when decommissioning a plant, BAT is to use the general techniques given in the table in the BAT conclusion documents.	Compliant - underground tanks and piping has been minimised where practical. The technical details, and diagrams/maps on the infrastructure is documented and maintained and updated where changes occur.
BAT 19-BAT 41	Not applicable – activities not carried out on site
BAT 42. In order to prevent the contamination of soil and groundwater or to reduce the risk thereof and in order to reduce wind drift of paper for recycling and diffuse dust emissions from the paper for recycling yard, BAT is to use one or a combination of the techniques given below a) Hard surfacing of the storage area for paper for recycling	Compliant – wastepaper is stored on hard concrete surface. Waste paper for tissue mill will be located entirely indoors. All water drainage for internal and external storage is sent to the ETP and surface run off is segregated. The site is also compliant with BAT 19 of the Waste Treatment BRef

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
b) Collection of contaminated run-off water from the paper for recycling storage area and treatment in a waste water treatment plant (uncontaminated rainwater e.g. from roofs can be discharged separately) c) Surrounding the terrain of the paper for recycling yard with fences against wind drift d) Regularly cleaning the storage area and sweeping associated roadways and emptying gully pots to reduce diffuse dust emissions. This reduces wind-blown paper debris, fibres and the crushing of paper by on-site traffic, which can cause additional dust emission, especially in the dry season e) Storing of bales or loose paper under a roof to protect the material from weather influences (moisture, microbiological degradation processes, etc.)	
BAT 43. In order to reduce fresh water use, waste water flow, and the pollution load, BAT is to use a combination of the techniques given below. a) Separation of the water systems b) Counter-current flow of process water and water recirculation	Compliant - all techniques a)-d) are applied on site.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
c) Partial recycling of treated waste water after biological treatment d) Clarification of white water	
BAT 44. In order to maintain advanced water circuit closure in mills processing paper for recycling and to avoid possible negative effects from the increased recycling of process water, BAT is to use one or a combination of the techniques given below a) Monitoring and continuous control of the process water quality b) Prevention and elimination of biofilms by using methods that minimise emissions of biocides c) Removal of calcium from process water by a controlled precipitation of calcium carbonate	Compliant – all three techniques are applied on site.
BAT 45. In order to prevent and reduce the pollution load of waste water into receiving waters from the whole mill, BAT is to use a suitable combination of the techniques specified in BAT 13, BAT 14, BAT 15, BAT 16, BAT 43 and BAT 44	Compliant – applicable emission limits from tables 18 and 19 applied, due to removal of the de-inking plant. ETP will run in accordance to the other BAT techniques to comply with emission limits set out in table 18.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 46. BAT is to reduce electrical energy consumption within RCF processing paper mills by using a combination of the techniques given a) High consistency pulping for disintegrating paper for recycling into separated fibres b) Efficient coarse and fine screening by optimising rotor design, screens and screen operation, which allows the use of smaller equipment with lower specific energy consumption c) Energy saving stock preparation concepts extracting impurities as early as possible in the re-pulping process, using fewer and optimised machine components, thus restricting the energy intensive processing of the fibres	Compliant - the pulp processing will incorporate all three techniques.
BAT 47. In order to reduce the generation of waste water, BAT is to use a combination of the techniques given a) Optimum design and construction of tanks and chests b) Fibre and filter recovery and treatment of waste water	Compliant - BAT 47 a, b and c are applied on site for both the cardboard and tissue mill.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
c) Water recirculation d) Optimisation of showers in the paper machine	
BAT 48. In order to reduce fresh water use and emissions to water from speciality paper mills, BAT is to use a combination of the techniques given below. In order to reduce fresh water use and emissions to water from speciality paper mills, BAT is to use a combination of the techniques given below.	Not applicable – not a Speciality mill
BAT 49. In order to reduce emission loads of coating colours and binders which can disturb the biological waste water treatment plant, BAT is to use technique a) Recovery of coating colours/recycling of pigments b) Pretreatment of effluents which contain coating colours	Not applicable – binders and colour coating not undertaken
BAT 50. In order to prevent and reduce the pollution load of waste water into receiving waters from the whole mill, BAT is to use a suitable combination of the techniques specified	Compliant - see the relevant BAT for details on how techniques are applied. The BAT associated emission levels have been updated to reflect the removal of the de-inking plant

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
in BAT 13, BAT 14, BAT 15, BAT 47, BAT 48 and BAT 49.	
BAT 52. In order to minimise the amount of solid waste to be disposed of, BAT is to prevent waste generation and to carry out recycling operations by the use of a combination of the techniques given (see general BAT 20). a) Fibre and filler recovery and treatment of white water b) Broke recirculation system c) Recovery of coating colours/recycling of pigments d) Reuse of fibre sludge from primary waste water treatment	Compliant – BAT 52 a) white water is recovered and treated in the containerboard process. (BAT 52 b) Broke is collected and processed at various locations in the paper machine and re-pulped and integrated into the pulp feedstock.
BAT 53 In order to reduce the consumption of thermal and electrical energy, BAT is to use a combination of the techniques given below. a) Energy saving screening techniques (optimised rotor design, screens and screen operation) b) Best practice refining with heat recovery from the refiners	Compliant – applicant has stated that all techniques a-m used for containerboard. BAT 53. c) is used for both tissue and containerboard, Tissue mill uses ReDry system that applies hot, humid air from the Yankee hood exhaust instead of steam box (j)

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
c) Optimised dewatering in the press section of paper machine/wide nip press d) Steam condensate recovery and use of efficient exhaust air heat recovery systems e) Reduction of direct use of steam by careful process integration using e.g. pinch analysis f) High efficient refiners g) Optimisation of the operating mode in existing refiners (e.g. reduction of 'no load power requirements) h) Optimised pumping design, variable speed drive control for pumps, gearless drives i) Cutting edge refining technologies j) Steam box heating of the paper web to improve the drainage properties/dewatering capacity k) Optimised vacuum system (e.g. turbo fans instead of water ring pumps) l) Generation optimisation and distribution network maintenance	

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
m) Optimisation of heat recovery, air system, insulation n) Use of high efficient motors (EFF1) o) Preheating of shower water with a heat exchanger p) Use of waste heat for sludge drying or upgrading of dewatered biomas q) Heat recovery from axial blowers (if used) for the supply air of the drying hood r) Heat recovery of exhaust air from the Yankee hood with a trickling tower s) Heat recovery from the infrared exhaust hot air	

Large Combustion Plant

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 1. In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) (i) commitment of the management, including senior management; (ii) definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; (iii) planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; (iv) implementation of procedures paying particular attention to: (a) structure and responsibility (b) recruitment, training, awareness and competence (c) communication (d) employee involvement (e) documentation (f) effective process control (g) planned regular maintenance programmes (h) emergency preparedness and response (i) safeguarding compliance with environmental legislation; (v) checking performance and taking corrective action, paying particular attention to:	Compliant- see BAT 1 for Paper and Pulp

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
(a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED-installations — ROM) (b) corrective and preventive action (c) maintenance of records (d) independent (where practicable) internal and external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained; (vi) review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness (vii) following the development of cleaner technologies; (viii) consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life including; (a) avoiding underground structures (b) incorporating features that facilitate dismantling (c) choosing surface finishes that are easily decontaminated (d) using an equipment configuration that minimises trapped chemicals and facilitates drainage or cleaning (e) designing flexible, self-contained equipment that enables phased closure (f) using biodegradable and recyclable materials where possible (ix) application of sectoral benchmarking on a regular basis. Specifically for this sector, it is also important to consider	

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
the following features of the EMS, described where appropriate in the relevant BAT (x) quality assurance/quality control programmes to ensure that the characteristics of all fuels are fully determined and controlled (see BAT 9); (xi) a management plan in order to reduce emissions to air and/or to water during other than normal operating conditions, including start-up and shutdown periods (see BAT 10 and BAT 11) (xii) a waste management plan to ensure that waste is avoided, prepared for reuse, recycled or otherwise recovered, including the use of techniques given in BAT 16; (xiii) a systematic method to identify and deal with potential uncontrolled and/or unplanned emissions to the environment, in particular: (a) emissions to soil and groundwater from the handling and storage of fuels, additives, by-products and wastes (b) emissions associated with self-heating and/or self-ignition of fuel in the storage and handling activities; (xiv) a dust management plan to prevent or, where that is not practicable, to reduce diffuse emissions from loading, unloading, storage and/or handling of fuels, residues and additives; (xv) a noise management plan where a noise nuisance at sensitive receptors is expected or sustained, including: (a) a protocol for conducting noise monitoring at the plant boundary	

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
(b) a noise reduction programme (c) a protocol for response to noise incidents containing appropriate actions and timelines (d) a review of historic noise incidents, corrective actions and dissemination of noise incident knowledge to the affected parties; (xvi) a noise management plan where a noise nuisance at sensitive receptors is expected or sustained, including; (a) a protocol for conducting noise monitoring at the plant boundary (b) a noise reduction programme (c) a protocol for response to noise incidents containing appropriate actions and timelines (d) a review of historic noise incidents, corrective actions and dissemination of noise incident knowledge to the affected parties;	
BAT 2. BAT is to determine the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the gasification, IGCC and/or combustion units by carrying out a performance test at full load¹, according to EN standards, after the commissioning of the unit and after each modification that could significantly affect the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the unit. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	Compliant in the future – CHP is not yet fully operational. We have included in the permit an Improvement Condition requiring the operator to submit this after CHP is commissioned and tested.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant												
<i>¹In the case of CHP units, if for technical reasons the performance test cannot be carried out with the unit operated at full load for the heat supply, the test can be supplemented or substituted by a calculation using full load parameters.</i>													
BAT 3. BAT is to monitor key process parameters relevant for emissions to air and water including those given below. <table><tr><th>Stream</th><th>Parameter(s)</th><th>Monitoring</th></tr><tr><td rowspan="3">Flue-gas</td><td>Flow</td><td>Periodic or continuous determination</td></tr><tr><td>Oxygen content, temperature, and pressure</td><td rowspan="2">Periodic or continuous measurement</td></tr><tr><td>Water vapour content ⁽¹⁾</td></tr><tr><td>Waste water from flue-gas treatment</td><td>Flow, pH, and temperature</td><td>Continuous measurement</td></tr></table> ⁽¹⁾ The continuous measurement of the water vapour content of the flue-gas is not necessary if the sampled flue-gas is dried before analysis.	Stream	Parameter(s)	Monitoring	Flue-gas	Flow	Periodic or continuous determination	Oxygen content, temperature, and pressure	Periodic or continuous measurement	Water vapour content ⁽¹⁾	Waste water from flue-gas treatment	Flow, pH, and temperature	Continuous measurement	Compliant - site is equipped with Continuous Emission Monitoring Systems (CEMS) as required for emissions of flue gas.
Stream	Parameter(s)	Monitoring											
Flue-gas	Flow	Periodic or continuous determination											
	Oxygen content, temperature, and pressure	Periodic or continuous measurement											
	Water vapour content ⁽¹⁾												
Waste water from flue-gas treatment	Flow, pH, and temperature	Continuous measurement											
BAT 4. BAT is to monitor emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality	Compliant - monitoring frequency will be in-line with the standard as required by the permit												
BAT 5. BAT is to monitor emissions to water from flue-gas treatment with at least the frequency given below and in accordance with EN	Not applicable – flue gas treatment is not required as the fuel is natural gas.												

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	
BAT 6. in order to improve the general environmental performance of combustion plants and to reduce emissions to air of CO and unburnt substances, BAT is to ensure optimised combustion and to use an appropriate combination of the techniques given below. a. Fuel blending and mixing b. Maintenance of the combustion system c. Advanced control system d. Good design of the combustion equipment e. Fuel choice	Compliant - the new CHP plant will apply the following • Maintenance control (BAT 6b) • CHP will have advance system control (BAT 6 c) • Gas turbines are ready to run with a 20% Natural gas/Hydrogen mix (BAT 6e)
BAT 7. In order to reduce emissions of ammonia to air from the use of selective catalytic reduction (SCR) and/or selective non-catalytic reduction (SNCR) for the abatement of NO _x emissions, BAT is to optimise the design and/or operation of SCR and/or SNCR (e.g. optimised reagent to NO _x ratio, homogeneous reagent distribution and optimum size of the reagent drops).	Not applicable - SCR/SNCR is not used on site.
BAT 8. In order to prevent or reduce emissions to air during normal operating conditions, BAT is to ensure, by appropriate design, operation and maintenance, that the emission abatement systems are used at optimal capacity and availability.	Compliant – gas turbines are equipped with ‘SoLoNO _x ’ patented burner technology and secondary air supply to minimise NO _x emissions.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 9. In order to improve the general environmental performance of combustion and/or gasification plants and to reduce emissions to air, BAT is to include the following elements in the quality assurance/quality control programmes for all the fuels used, as part of the environmental management system (see BAT 1): (i) Initial full characterisation of the fuel used including at least the parameters listed below and in accordance with EN standards. ISO, national or other international standards may be used provided they ensure the provision of data of an equivalent scientific quality (ii) Regular testing of the fuel quality to check that it is consistent with the initial characterisation and according to the plant design specifications. The frequency of testing and the parameters chosen from the table below are based on the variability of the fuel and an assessment of the relevance of pollutant releases (e.g. concentration in fuel, flue-gas treatment employed); (iii) Subsequent adjustment of the plant settings as and when needed and practicable (e.g. integration of the fuel characterisation and control in the advanced control system (see description in Section 8.1)).	Compliant - natural gas is procured through the licensed gas supply network. This includes quality check on fuel used.
BAT 10. In order to reduce emissions to air and/or to water during other than normal operating conditions (OTNOC), BAT is to set up and implement a management plan as part of the environmental management system (see BAT 1), commensurate with the relevance of potential pollutant releases, that includes the following elements:	Compliant in the future – We have included in the permit a Pre-operational Condition requiring the operator to submit an OTNOC prior to full operation of the CHP.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
• appropriate design of the systems considered relevant in causing OTNOC that may have an impact on emissions to air, water and/or soil (e.g. low-load design concepts for reducing the minimum start-up and shutdown loads for stable generation in gas turbines); • set-up and implementation of a specific preventive maintenance plan for these relevant systems; • review and recording of emissions caused by OTNOC and associated circumstances and implementation of corrective actions if necessary; • periodic assessment of the overall emissions during OTNOC (e.g. frequency of events, duration, emissions quantification/estimation) and implementation of corrective actions if necessary.	
BAT 11. BAT is to appropriately monitor emissions to air and/or to water during OTNOC.	Compliant - CEMS monitoring will be used under OTNOC conditions.
BAT 12. BAT 12. In order to increase the energy efficiency of combustion, gasification and/or IGCC units operated $\geq 1\,500$ h/yr, BAT is to use an appropriate combination of the techniques given below. a) Combustion optimisation b) Optimisation of the working medium conditions c) Optimisation of the steam cycle d) Minimisation of energy consumption e) Preheating of combustion air f) Fuel preheating g) Advanced control system	Compliant - gas turbine is to be used for combined heat and power (i-j and advanced control system g) 12 o, p, s not applicable to this type of gas turbine.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
h) Feed-water preheating using recovered heat i) Heat recovery by cogeneration (CHP) j) CHP readiness k) Flue-gas condenser l) Heat accumulation m) Wet stack n) Cooling tower discharge o) fuel pre-drying p) Minimisation of heat losses q) Advanced materials r) Steam turbine upgrades s) Supercritical and ultra-supercritical steam conditions	
BAT 13. In order to reduce water usage and the volume of contaminated waste water discharged, BAT is to use one or both of the techniques given below. a) Water recycling b) Dry bottom ash handling	Compliant – site has a closed loop system. 13 b) - Not applicable
BAT 14. In order to prevent the contamination of uncontaminated waste water and to reduce emissions to water, BAT is to segregate waste water streams and to treat them separately, depending on the pollutant content.	Compliant – site has been redesigned with segregated drainage.
BAT 15. In order to reduce emissions to water from flue-gas treatment, BAT is to use an appropriate combination of the techniques given below, and to use secondary techniques as close as possible to the source in order to avoid dilution.	Not applicable – no flue gas treatment as no SCR is used on site and fuel is natural gas.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
a) Optimised combustion (see BAT 6) and flue-gas treatment systems (e.g. SCR/SNCR, see BAT 7) b) Adsorption on activated carbon c) Aerobic biological treatment d) Anoxic/anaerobic biological treatment e) Coagulation and flocculation f) Crystallisation g) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) h) Flotation Ion exchange i) Neutralisation j) Oxidation k) Precipitation l) Sedimentation m) Stripping	
BAT 16. In order to reduce the quantity of waste sent for disposal from the combustion and/or gasification process and abatement techniques, BAT is to organise operations so as to maximise, in order of priority and taking into account life-cycle thinking: a) waste prevention, e.g. maximise the proportion of residues which arise as by-products; b) waste preparation for reuse, e.g. according to the specific requested quality criteria; c) waste recycling; d) other waste recovery (e.g. energy recovery), by implementing an appropriate combination of techniques.	Not applicable - only combustion is natural gas, and no solid waste is produced.
BAT 17. In order to reduce noise emissions, BAT is to use one or a combination of the techniques given.	Compliant - CHP is to be located inside a building (installed prior to commissioning).

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 18. - BAT 27.	Not applicable, BAT conclusions are for solid fuel. Biomass plant covered under Waste Incinerator BRef
BAT 28. – BAT 39.	Not applicable, BAT conclusions are for liquid fuel. No liquid fuel for combustion on site.
BAT 40. In order to increase the energy efficiency of natural gas combustion, BAT is to use an appropriate combination of the techniques given in BAT 12 and below a) Combined cycle	Compliant Main CHP has combined cycle gas turbines and heat recovery steam generators fitted. Back up boiler – not applicable as boiler operates less than 1,500 hours per year
BAT 41. In order to prevent or reduce NO _x emissions to air from the combustion of natural gas in boilers, BAT is to use one or a combination of the techniques given below. a) Air and/or fuel staging b) Flue-gas recirculation c) Low-NO _x burners (LNB) d) Advanced control system e) Reduction of the combustion air temperature f) Selective non– catalytic reduction (SNCR) g) Selective catalytic reduction (SCR)	Compliant - Back up boilers are equipped with low NO (BAT 41 c) and utilise gas recirculation (BAT 42 b). Backup boilers will have advanced control system installed. f) and g) SNCR and SCR are not applied on site.

Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant , Compliant in the future (Only for existing activities within 4 years of publication of BAT conclusions), Not Compliant
BAT 42. In order to prevent or reduce NO_x emissions to air from the combustion of natural gas in gas turbines, BAT is to use one or a combination of the techniques given below. a) Advanced control system b) Water/steam addition c) Dry low-NO_x burners (DLN) d) Low-load design concept e) Low-NOX burners (LNB) f) Selective catalytic reduction (SCR)	Compliant – BAT 42 a and c: 2 x gas turbines have and advanced control system and dry low No=O_x burners (SoLoNO_x) equipped.