

UPM Shotton

# Environmental Responsibility

## 2017



# UPM Shotton

The mill is situated on the Dee estuary in Flintshire, North Wales. The Dee Estuary is a designated Special Protection Area one of the 112 listed Natura 2000 sites in Wales. The mill site is about 10 miles from Chester and 25 miles from Liverpool.

The mill began production with one newsprint line in 1985. The fibre was supplied by an energy intensive thermo-mechanical pulp mill which used pulpwood, straight from the forest, as its principal raw material.

A second newsprint line was added in 1989 together with the first of three recycled fibre production plants.

Today only one paper machine operates and uses 100% recycled fibre. The principal raw material is now sorted, recovered graphic papers, mainly from domestic waste collections.

There have been several other large environmental investments over the last 28 years and the operations on site continue to develop.

The effluent treatment plant was rebuilt with activated sludge technology to deliver dramatic improvements in waste water quality despite increases in production.

Waste sludge from the recycled fibre production plants is burnt in a combined heat and power (CHP) plant on site along with other renewable fuels to provide most of the site's thermal energy and approximately a third of its electricity demand.

A Material Recovery and Recycling Facility (MRRF) was constructed and started operation on the site in April 2011. This plant sorts the recyclable material from co-mingled domestic waste collections and delivers high quality recovered paper raw materials to the recycled fibre production plants.



UPM Shotton Environmental and Societal Responsibility 2017 is a supplement to the Corporate Environmental Statement of UPM's pulp and paper mills (available at [www.upm.com](http://www.upm.com)) and provides mill-specific environmental performance data and trends for the year 2017. The annually updated mill supplements and the UPM Corporate Environmental Statement together form the joint EMAS Statement of UPM Corporation. The next Corporate Environmental Statement and also this supplement will be published in 2019.

UPM leads the forest-based bioindustry into a sustainable, innovation-driven, and exciting future across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Paper ENA and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve our customers worldwide. The group employs around 19,100 people and its annual sales are approximately EUR 10 billion. UPM shares are listed on NASDAQ OMX Helsinki. UPM – The Biofore Company – [www.upm.com](http://www.upm.com)

<b>Production capacity</b>	Up to 266,700 tonnes per annum
<b>Personnel</b>	182
<b>Products</b>	Standard Newsprint
<b>Certificates</b>	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality Management System PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council  All certificates can be found from UPM's Certificate Finder (available at <a href="http://www.upm.com/responsibility">www.upm.com/responsibility</a> ).
<b>Environmental labels</b>	EU Ecolabel license for newsprint papers Registration No. FI/37/001 valid until 31/12/2018
<b>Awards</b>	Investors in People Standard



The mark of responsible forestry  
For FSC products, visit [www.fsc.org](http://www.fsc.org)



For PEFC products, visit [www.pefc.org](http://www.pefc.org)



EU Ecolabel : FI/037/001



# Review of the year 2017

Midway through the year UPM Shotton's General Manager departed to take early retirement and a new General Manager, Tomi Hytonen, joined the mill. Tomi came from a similar operation in Finland and brings good experience in environmental leadership.

At UPM Shotton our commitment to sustainable development is reflected in our Mill Vision 'to be the front runner in creating value from renewable and recyclable materials'. We are also aware of our responsibility to society and the community in which we operate.

We operate within the boundaries of an Integrated Pollution, Prevention and Control permit. The conditions within this permit are transposed from the European Industrial Emissions Directive with reference to the current paper and pulp BREF document. This permit is regulated by Natural Resources Wales.

During 2017 there were no breaches of these permit conditions. The mill employees and contractors took an active part in observing environmental issues, reporting and correcting. This is administered through UPM's 'OneSafety' system.

The mill continued to use waste paper for all of its fibrous raw material feedstock. Much of this was produced through its own materials recovery facility on site – in which mixed recyclable materials are processed to separate into individual products for recycling.

During the year a high proportion of mill's needs were met from its own biomass boiler and two turbines. Further power from its neighbouring, partner solar park was used to add to this renewable mix.

New waste reprocessing outlets were developed in 2017 to allow boiler ash to be re-used in useful construction materials.

The mill environmental targets were partly achieved; two areas were not fulfilled. During 2017 the trend for lighter newsprint continued causing the average basis weight on the paper machine to reduce. The energy and water usage in 2017 was higher than 2016 to produce a similar tonnage of paper. Smarter targets are set for 2018.



Andrew Bronnert,  
Head of Energy & Operational Support



Tomi Hytonen,  
General Manager

# Air



The CHP plant has the largest impact on the air emissions. Smaller back-up boilers on site only run during the winter months or during unplanned CHP plant shuts.

The 2017 fossil CO<sub>2</sub> emissions were higher than 2016 due unplanned downtime of the biomass boiler.

The emissions were well within permit limits as indicated in the tables below.

## EMISSIONS FROM THE COMBINED HEAT AND POWER PLANT IN 2017

Continuous Measurements	Limit mg/m <sup>3</sup>	Mean mg/m <sup>3</sup>
Carbon Monoxide (CO)	50	32.48
Nitrous Oxide (NO <sub>x</sub> )	200	171.93
Sulphur Dioxide (SO <sub>2</sub> )	50	4.02
Particulates	10	0.07
Total Organic Carbon (TOC)	10	0.96
Hydrogen Chloride (HCL)	10	1.57

Periodic Measurements (twice per annum)	Limit mg/m <sup>3</sup>	Mean mg/m <sup>3</sup>
Mercury	0.05	0.00090
Cadmium and Thallium	0.05	0.0110
Tin, Arsenic, lead, Chromium, Cobalt, Copper, Manganese, Nickel, Vanadium	0.5	0.106
HF	2	0.74
Dioxins / Furans (ITEQ)* 10-6	0.1	0.03300
Hydrogen Chloride (HCL)	10	1.57

# Waste



The mill reprocesses waste paper, co-mingled waste and waste wood. From these materials various residues are produced. Pulper rejects from the waste paper are landfilled. This material is wet and cannot be further reprocessed. Residues from the reprocessing of comingled waste via the mill MRRF are further reprocessed to make boiler fuel. Ash from the boiler is reprocessed into cement, building blocks and some goes to land. The mill is striving to reprocess more and landfill less but there are practical and financial limits to this.



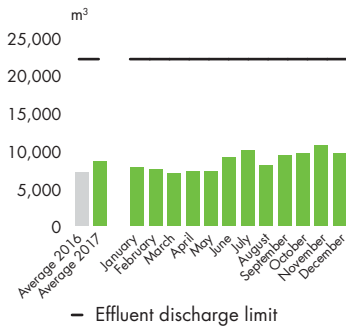
# Water

Fresh water consumption is constantly monitored and measured in all parts of the site. Process water is often re-used several times before being discharged to the effluent treatment plant. The

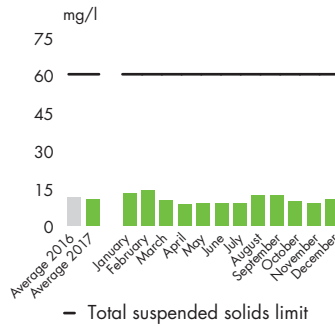
target in 2017 was to further reduce the water consumption; this was not achieved due to lower newsprint production basis weight and a worsening of waste paper quality.

The final effluent discharge remained well within consent limits throughout the year, as shown in the trends below.

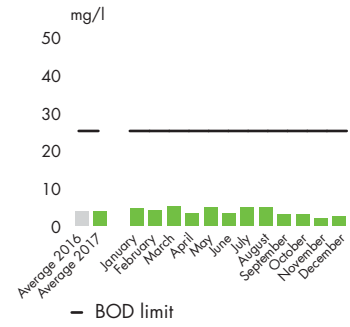
**Daily final effluent discharge volume**



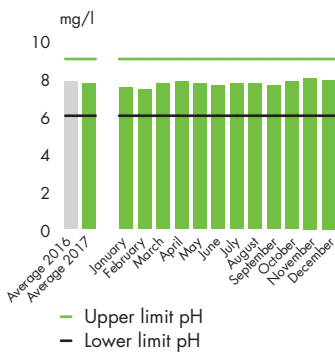
**Total Solids concentration in final effluent**



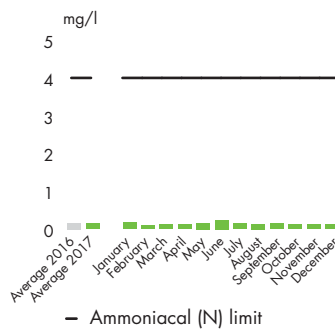
**Biological Oxygen Demand, BOD in final effluent**



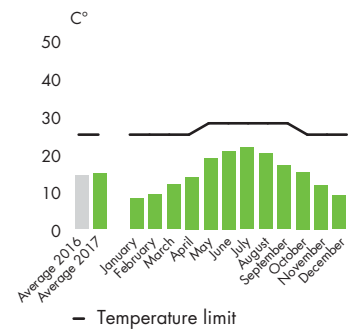
**pH value of final effluent**



**Ammoniacal Nitrogen, N concentration in final effluent**



**Temperature of final effluent**





# Environmental parameters 2017

The figures related to production as well as raw material and energy consumption are published as aggregated figures on group level in the UPM Corporate Environmental Statement.

<b>Production capacity</b>	Paper	Up to 266,700 t
<b>Raw materials (and additives)</b>	Recovered paper Co-mingled recyclates Process chemicals Operating supplies	See UPM Corporate Environmental Statement for more information
<b>Energy</b>	Biomass fuels Fossil fuels Electricity	92.3% 7.7% See UPM Corporate Environmental Statement for more information
<b>Emission to air</b>	Sulphur dioxide, SO <sub>x</sub> Nitrogen oxides, NO <sub>x</sub> Carbon Dioxide (fossil) Particulates	7.5 t 337.0 t 13,621 t 0.12 t
<b>Water intake</b>	Industrial*	4,055,281 m <sup>3</sup>
<b>Discharges to water</b>	Chemical Oxygen Demand Biological Oxygen Demand Total Solids Effluent Volume	283.5 t 11.5 t 32.2 t 3,123,286 m <sup>3</sup>
<b>Waste**</b>	Sludge Boiler ash*** Deinking residues (non-fibrous) Other Recovery rate Hazardous waste	9,867 t 34,723 t 8,090 t 3,878 t 60.1% 24.5 t
<b>Size of mill area</b>		62 ha

\* Including Potable water used on site

\*\* All waste tonnages are stated as dry weight and exclude wastes generated from the MRRF plant. Recovery rate is calculated on a bone-dry basis

\*\*\* These ashes are consider hazardous in the UK



# Performance against targets in 2017

TARGETS AND MEASURES	DEADLINE	ACHIEVEMENT
<b>1 Energy</b> Reduce total electrical energy consumption – target less than 2016 level  Increase % 'Green' electrical energy consumption – target more than 2016 level	12/2017	Not achieved, 12% increase due to increased newsprint production at lower grammage
<b>2 Water Conservation</b> Reduce total water consumption – target less than 2016 level	12/2017	Not achieved, 8% increase due to increased newsprint production at lower grammage
<b>3 Use of Resources</b> Reduce waste to landfill – target to decrease waste to landfill less than 2016	12/2017	Achieved, 35.3% reduction

# Targets for 2018

TARGETS AND MEASURES	DEADLINE
<b>1 Clean Run Targets</b> Cat 5, 4, 3 deviations (environmental incidents REPORTABLE to NRW) = 0  Cat 1 & 2 reports (environmental observations and near misses NOT REPORTABLE to NRW) > 400	12/2018
<b>2 Water Conservation</b> Reduce specific water consumption to less than 2017 level	12/2018
<b>3 Use of Resources</b> Reduce waste to landfill to less than 2017 level	12/2018



## Verifier's declaration on verification and validation activities

BSI, with EMAS verifier registration number UK-V-0002 accredited or licensed for the scope NACE 17 declares to have verified whether the site as indicated in the updated environmental statement of the organisation UPM Shotton with registration number FI-000058 meet all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

By signing this declaration, I declare that:

- the verification and validation has been carried out in full compliance with the requirements of this Regulation (EC) No 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information of the environmental statement of the site reflect a reliable, credible and correct image of all the sites activities, within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Done at UPM Shotton on 11/05/18

*Thomas W. Moss*

T. Moss  
 Environmental Specialist and EMAS verifier  
 BSI Assurance UK Limited  
 EMAS Verifier Registration No. UK-V-0002.



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