

UPM Caledonian

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2018



UPM Caledonian

UPM's Caledonian mill is situated in Irvine on the West Coast of Scotland approx. 50 kilometres southwest of Glasgow. In production since April 1989 the Caledonian mill is capable of producing 245,000 tonnes of lightweight coated paper (LWC) for printing magazines, catalogues, brochures. The mill has a Biomass Combined Heat and Power (CHP) plant, a single paper machine line, a debarking plant, a pressurised groundwood (PGW) mechanical pulp mill and a primary effluent treatment plant. Effluent is then treated further in the neighbouring Municipal Waste Water Treatment Plant operated by a third party.

Environmental issues are an integral part of everyday operations. Targets are set as part of our annual planning process with our key environmental aspects and impacts identified through our regulatory and business requirements to demonstrate continuous improvement. These are followed closely through the year. Our objective is to produce attractive and competitive paper with the lowest possible overall environmental impact. Through open communication we actively provide our customers, employees, environmental authorities, as well as our local community with information on environmental issues and knowledge of the mills operations.



UPM Caledonian Environmental and Societal Responsibility 2018 is a supplement to the Corporate Environmental and Societal Responsibility Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental and societal performance data and trends for the year 2018. The annually updated mill supplements and the UPM Corporate Environmental and Societal Responsibility Statement together form the joint EMAS Statement of UPM Corporation. The next UPM Corporate Environmental and Societal Responsibility Statement and also this supplement will be published in 2020.

We deliver renewable and responsible solutions and innovate for a future beyond fossils across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. We employ around 19,000 people worldwide and our annual sales are approximately EUR 10.5 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

Production capacity	245,000 tonnes of paper
Personnel	287
Products	Coated Magazine Papers: UPM Cote H UPM Cote SB (Customer Specific) H UPM Ultra H UPM Ultra Silk H UPM Cote Blueshade H
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 9001 – Quality Management System ISO 14001 – Environmental Management System OHSAS 18001 – Occupational Health and Safety 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 www.upm.com/responsibility)
Environmental labels	EU Ecolabel



The mark of responsible forestry

For FSC products, visit www.fsc.org



For PEFC products, visit www.pefc.org



EU Ecolabel : FI/011/001

Review of year 2018

Environmental Year

This Report gives information on the Mill's performance and covers the most significant environmental impacts – emissions to Air and Water; Waste and Material consumption.

UPM Caledonian operates within the boundaries of an Integrated Pollution Prevention and Control (PPC) Permit. The conditions of this permit are transposed from the European Industrial Emissions Directive with reference to the current Pulp and Paper BREF document. 2018 was a very good year in terms of compliance with our PPC permit as there were no instances of non-compliance to report. Emissions to air and water were of similar levels to the previous year.

As a consequence of the Best Available Techniques Reference Document of Pulp, Paper and Board being issued in 2015 Caledonian's PPC permit was reviewed and reissued in 2018 with some modified reporting and analysis requirements included which will be addressed over the coming year.

The performance of the CHP plant was poor in 2018 with 92% availability. There were several unplanned shutdowns primarily as a result of tube leaks in the Economiser section. This downtime has a knock on impact to the Auxilliary boiler uptime which operates on natural gas and hence an increased level of carbon dioxide emissions. The activities planned for the CHP shut in May 2019 will enhance the efficiency of the plant and include the replacement of the economiser section to prevent blockages in this area. There will also be an upgrade of the CHP bag house filters which will result in a lower level of particulate emissions.

UPM Caledonian works closely with the suppliers of biomass fuels to ensure

a stable supply of quality material is achieved to minimise any fluctuations in the overall boiler performance.

Energy

Minimising energy use is a key focus for the site and during 2018 we have seen a reduction on the specific energy consumption per tonne of LWC produced. Work will continue on energy savings in 2019.

The site was involved in a survey by the organization Zero Waste Scotland for the topic of Energy Measurement and Heat Quantification with the objective of developing opportunities for heat recovery. This survey has proved beneficial which has highlighted some opportunities for heat recovery which include:

- A detailed review of the potential to greater utilise excess steam within the coater, to reduce gas and electricity consumption to process equipment (air foils and impact dryer).
- A review of the potential to utilise Or-

ganic Rankine Cycle (ORC) technology to generate electricity from waste heat.

Several areas of energy efficiency were achieved during 2018, one of which involved the replacement of ducting in the flue gas area of the CHP plant. Excessive air leaks were prominent in the area which had resulted in the ID fans being operated at higher loads and a decrease in the overall efficiency of the plant. Also completed last year was a recovery of fibres/water of the filtrates from the PGW process and passing this to the papermachine for processing, saving on water, raw materials and energy.

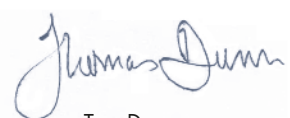
Management Systems

We continue to maintain and develop our management systems for ISO 9001, ISO 14001 and OHSAS 18001.

During 2018 Caledonian began working towards certification to ISO 45001 which came into effect in March 2018 ▶



Gordon Mitchell
General Manager



Tom Dunn
HSE Manager

- ▶ replacing the OHSAS 18001 standard. The transition to ISO 45001 will be complete by end of Quarter 1 2019. There are some new concepts in this standard where organisations must look more closely at how they ensure the consultation and participation of workers and interested parties, there is also greater emphasis on top management demonstrating leadership and commitment through promotion of the OHS system. The overall aim of ISO 45001 is to eliminate the root causes of incidents and consequently preventing injury and ill health.

Participation of employees is encouraged through various mechanisms which include the monthly safety meetings which involve a wide range of employees including the union representatives. There are also routine area discussions and meetings which are ideal forums for consultation and participation.

Occupational Health and Safety

2018 was a difficult year for occupational health and safety with 5 LTAs (long term accidents) reported. A key focus for 2019 is to prevent these types of accidents and increase employee's awareness of risks before carrying out tasks by requesting that all employees carry out a minimum of 3 quality STAT cards throughout the year. STAT cards (Stop, Take 5 and Think) provide employees with a tool to carry out a simple risk assessment where hazards and risks are identified, controlled and minimized. In 2019 risk awareness will also be promoted via the 'Top 5 Risks' for each area where representatives from each area define what are the tasks with the greatest risks and review the control measures in place to remove or minimize the risk.

Absence performance at Caledonian has deteriorated over the last few years with an increase in long term illness of employees which is partly related to the age profile of the workforce. To minimize the length of absences Caledonian offer an excellent health care package which includes the following services: doctor and nurse appointments; physiotherapy; massage specialist and a stress counselor. The medical Centre also encourages employees to have an annual health check to assess general well being and provide support if further testing is identified.

Responsibility figures 2018

Waste



Recovery/Reuse/Recycle

100%

Co-operation with waste contractor ensures zero to landfill

Air



11%

reduction in Nitrous Oxide emissions to air (2018 vs 2017)



Certified Fibre

85%

of fibre used in paper production was FSC and /or PEFC certified. UPMs target is to use only certified fibre by 2030

112,491 tons of LWC sold under PEFC or FSC certification schemes.

Energy



55%

of all required electricity is generated onsite using renewable sources via the CHP biomass fueled boiler.

Safety



558

safety observations reported by employees, visitors and contractors of which

64

included an environmental element

97%

KPI for all safety incidents being handled within 6 weeks from initial reporting

94%

Actions closed. Where action was required as a result of all incidents, walks etc carried out in 2018.

Health



691

appointments for medical services including Company Doctor, Physiotherapist, Stress Counsellor and massage therapist.

Supply Chain



98%

of raw materials spend qualified against UPM Supplier and Third Party Code (wood not included)



Employment

Caledonian Employed

287 People

Total persons at Caledonian Paper

Annual Shut 2018

534 number of external employees involved in the annual shutdown in May 2018.

26,613 hours worked by contractors during annual shutdown.

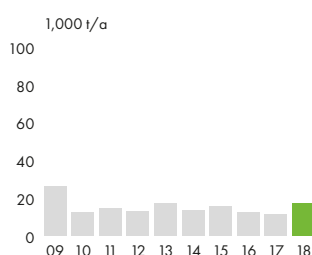
Air



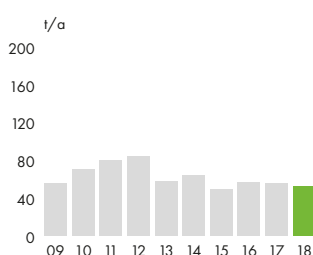
2018 was a difficult year in terms of CHP uptime as there were several instances of tube failures within the boiler which ultimately led to an increased uptime of the auxiliary boiler which is fuelled with natural gas. This increase in natural gas consumption is one of the factors leading to a higher level of carbon dioxide emissions in 2018: 17,367tn vs 11,309tn in 2017.

Emissions to air for Nitrous Oxides, Sulphur Dioxide and particulate matter were all at lower levels in 2018 some as a result of the reduced uptime of the CHP plant, however for particulates the maintenance of the bag filters in the system had a positive impact on the emissions.

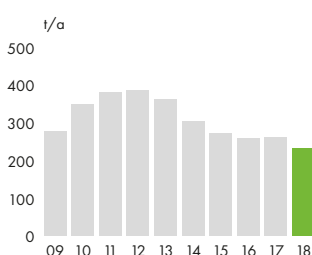
Fossil carbon dioxide, CO₂



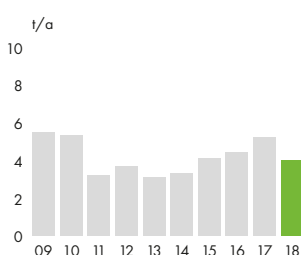
Sulphur dioxide, SO₂



Nitrogen oxides, NO_x



Particulates



t/a refers to tonnes per annum

Waste



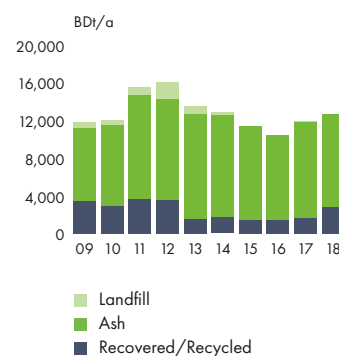
Close liaison with our waste contractor continues to ensure that the volume of waste going straight to landfill is minimised. The levels of waste being produced from the site is at similar levels to the previous year. Waste segregation onsite has been a key area of focus over the past year to guide employees in choosing the correct waste container and minimise contamination of waste streams.

During 2019 the weighbridge functionality will be upgraded to improve safety and site security, as a consequence of this the waste system within the weighbridge will also be modified. This upgrade will be of great benefit to the recording of all wastes which will now be automatic and prevent the possibility of manual errors.

During 2018 the site had a major failure of the pump that transfers all sanitary effluent to the municipal waste water treatment plant. For a temporary period, this led the sanitary waste being taken off site via tanker and ultimately fed to the municipal waste water system. The tonnage of the waste was 1079tons.

The ash residues which are produced during combustion in the CHP boiler is classified as hazardous waste however this is used in the consolidation of liquid hazardous wastes at the waste contractor's site to minimise the environmental impact.

Solid waste



All waste volumes based on dry tonnes

Water

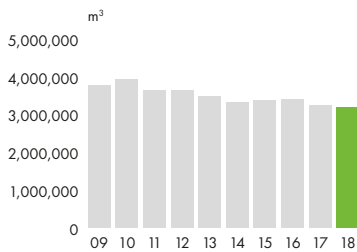
Both fresh water usage and effluent volumes are of key focus in the paper-making process with the volumes of both at similar levels to 2017.

The effluent from the mill undergoes primary effluent treatment onsite prior to secondary treatment at the municipal effluent plant. There were slight increases in suspended Solids, Chemical Oxygen Demand and Biological Oxygen Demand from the site. A key

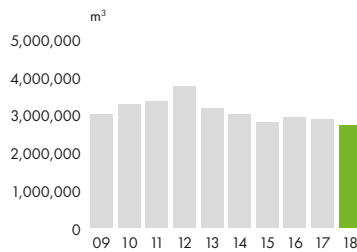
area of focus during 2018 was reducing the BOD emissions from the site when producing the higher brightness grades of paper where the increase in bleaching chemicals has a direct impact on the BOD emissions. The bleaching recipe underwent modifications which minimises the BOD being released from site while producing these grades of paper. Performance of the primary effluent treatment remains at a very good level with all emission within consent levels.

During 2017 Caledonian commenced discussions with a third party to treat all effluent at the local secondary effluent treatment plant. This project is underway with a new effluent inlet established and further construction work for screening underway. It is envisaged all work will be completed by Q2 with the new third party treating the sites effluent from May 2019 onwards.

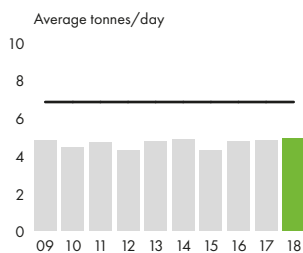
Freshwater Consumption



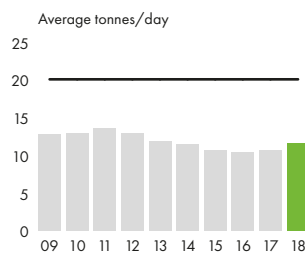
Effluent Volume



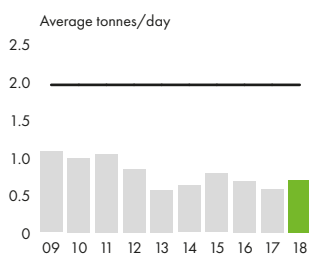
Biological oxygen demand, BOD₅



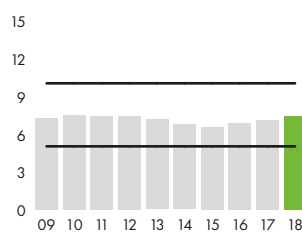
Chemical oxygen demand, COD



Total suspended solids, TSS



Effluent PH



— Limit value

— Upper and lower limit

Societal responsibility

Customer Visits

Caledonian Paper hosts several customer focused visits each year which will be organised in conjunction with the local sales offices. In 2018 we had a visit from five new employees of the customer Gould Bowden with a key focus on providing background training on paper-making ranging from the raw materials required, the manufacturing process and the quality characteristic of paper. An appreciation of UPMs life cycle analysis and sustainability concept of paper is always of benefit to paper buyers in their decision making.

Another customer visit which was driven via the sales team involved a visit from English Heritage and involved a full site tour and a detailed discussion on the environmental parameters of the site which proved useful information for the customer in preparing their own environmental and sustainability review.

Work Experience Students

For many years Caledonian has offered local school children in their senior years the opportunity to have one weeks work experience at the site in various departments depending on which career path they are most interested in. Some of the placements we have offered have included Engineering, IT & Customer Service, Laboratories, HR and Payroll. This is of great benefit to the students as it offers an insight not only in the papermaking process but also what working life may entail when they enter the job market. Although supervised during their time onsite the students get an opportunity to develop their independence and communication skills.

A work placement in the laboratories will offer the students an array of experiences as they will become involved in the following tasks: paper testing; chemical, effluent and biomass testing; calibration activities. Interaction within the department and with colleagues in

other areas is vital and gives the student an excellent perspective on interdepartmental interactions.

Our most recent student (Aela Norris 4th year pupil at Glennifer High School) spent a week in the laboratories, below is a summary of her experience.

"During my time at Caledonian I worked in the laboratories doing many different tests and experiments on the products that go into making paper and the finished product at the end of the process. I worked in a different part of the laboratory every day and found out about different parts of the paper making process.

I enjoyed the whole week as the tasks I carried out were very interesting and interactive, but my favourite part was when I worked with the raw materials and carried out lots of different experiments to test the quality of the products used for making paper. I also enjoyed testing paper samples eg, gloss, brightness, tensile and tear strength. It was very illuminating to experience the process behind making paper.

When I started at Caledonian, I was quite shy and not sure what to expect, but the staff were very welcoming and kind and helped me get settled in. Whilst there I also developed my confidence and communication skills, which I found very useful. I had the opportunity to meet many different people and learn about the company first hand.

I was surprised to learn about industry and how important a role it plays in our day to day lives. As Caledonian is such a big company it was incredible to see how many different aspects of production all come together to make a final product. I think that I greatly benefited from my week at Caledonian and it was a fascinating experience."



Aela Norris performing tear testing



English Heritage staff with Mark Saunderson (UPM)

Info TV

During 2018 Caledonian introduced the concept of Info TVs throughout the site to enhance communication with all employees. Communication to shift employees is always a challenge due to the nature of the working hours: email communication is not always effective and face to face communication is not always possible so the concept of Info TV is seen as a good compromise. The site has installed 10 television monitors in various control rooms throughout the manufacturing line which are updated regularly with key information.

Information communicated include:

- Production performance
- Safety Performance
- Energy saving opportunities
- Minutes of Safety committee meetings
- Basic training and guidance on information finding (Risk Assessments, SOPs etc)
- Key customer information

This information has proven to be very successful and has improved the aware-

ness of operators allowing for further discussions at area team meetings. The management team also plan to carry out face to face briefings with all employees in January 2019 to share the business plan strategy and environmental targets.

Qualified Spend

Figures for qualified spend are quoted on the infographs on pages 4 and 5.

UPM requires its suppliers to comply with the UPM Supplier Code and Third Party Code (Code) that defines suppliers' minimum requirements in terms of responsibility with regard to matters such as environmental impact, human rights, labour practices, health and safety, product safety, corruption and bribery. UPM's target is to have 100% of raw material spend and 80% of all spend qualified against UPM Supplier and Third Party Code by 2030 (Qualified spend). In 2018, 94% of UPM's raw material spend and 83% of all spend was qualified against the UPM Supplier and Third Party Code.

Environmental parametres 2018

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 and Societal Responsibility Statement.

Production capacity	Paper LWC	245,000 t
Raw materials (BDT)	Pulp Pigments Process Chemicals	See UPM Corporate Environmental and Societal Responsibility Statement for more information
Energy	Biogenic Fuels Fossil Fuels Electricity	See UPM Corporate Environmental and Societal Responsibility Statement for more information
Emission to air	Sulphur Dioxide, SO _x Nitrous Oxides, NO _x Carbon Dioxide, CO ₂ (fossil) Particulates	52 t 232 t 17,367 t 4 t
Water intake	Fresh Water	3,187,311 m ³
Discharges to water	Chemical Oxygen Demand (COD) Total Suspended Solids Biological Oxygen Demand (BOD ₅) Effluent Volume	4,222 t 254 t 1,789 t 2,735,476 m ³
Non-hazardous waste*	Landfill Materials Recycling, Energy recovery or Composting (See below for breakdown) – Boiler Ash – Bark & Other Wood Residues – Sanitary Waste – Other	0 t 12,219 t 9,718 t 773 t 1,079 t 649 t
Hazardous Waste		31 t
Size of mill area		33.1 ha

* All waste are dry weight



Performance against targets in 2018

TARGET	ACHIEVEMENT	COMMENTS
1 Clean Run Deviations Zero category 3, 4 or 5 deviations	No	1 category 3 deviation was reported in February 2018 – Mill effluent leak between site and municipal effluent treatment works
2 Cost effective solution to counteract Effluent Treatment Cost Escalation 2017/18	Ongoing	New Effluent agreement now in place (will commence May 2019) – New screening facility currently undergoing completion – PPC Permit varied to accommodate new discharge point
3 Achieve High environmental performance standards	Yes	Environmental performance for 2018 was very good with compliance of all emission level targets and several parameters indicating improvements during the year.

Targets for 2019

TARGET
1 Zero deviations against existing legislative requirements, including PPC permit and Water consent levels.
2 Create roadmap to reach 2030 sustainability targets.
3 Mill wide cost savings with focus on energy efficiency including MWh/t, m ³ /t, compressed air and heat recovery.
4 Seamless implementation of new effluent handling arrangement. – Look at opportunities for COD and Solids reduction.



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 & NACE 16 declares to have verified whether the site(s) or the whole organisation as indicated in the UPM Corporate Environmental and Societal Responsibility Statement 2018 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 updated 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 Caledonian on 14/03/19

Richard Edmond
 BSI Environmental Specialist Client Manager
 Strategic Delivery UK
 EMAS Verifier Registration No. UK-V-002.

We reduce the world's reliance on fossil-based materials by developing renewable and responsible products and solutions in all our businesses. **UPM Biofore – Beyond fossils.**



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