

THE WATER CONSERVATION TRUST



Charity Update

Registered Charity 1007648, c/o HQS Wellington, Temple Stairs, Victoria Embankment, London, WC2R 2PN



Autumn 2020



Message from Roger North, Chairman of the Trustees – when Trustees met via Zoom on 10 November 2020, they discussed whether anything more could be done to alleviate the impact of the COVID-19 pandemic on the Trust's programmes and to assist beneficiaries. They noted that

both schools and universities were still struggling, including difficulties in processing grants because of furloughed staff. Trustees will continue to work with beneficiaries to find ways to move forward.

COVID-19 has particularly affected our Schools Programme in London, where water fountains were being installed at Sir John Cass Foundation Primary School and where the lifespan of reusable water bottles was being researched at Hugh Myddelton Primary School. Hopefully, this work will be completed in Spring 2021.

The sponsored school visits to the Museum of Water and Steam at Kew, supporting engineering and science, have been put on hold. The Trust and the Museum continue to search for water sector sponsors.

Trustee News

Trustee Rob Casey was installed as the 32nd **Master of the Worshipful Company of Water Conservators** in September 2020. Rob has a special interest in the Schools Programme. He is a school governor and would like to contact other Conservator governors.



Past Master Simon Catford was appointed a Trustee in October 2020. As well as being an experienced director, Simon fills a gap in expertise – fundraising, and will make a major contribution to plans to increase the Trust's income to allow a substantial increase in expenditure.

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2020 Water Walk

To raise funds for our Schools Programme the Water Conservation Trust has organised a sponsored walk for many years and has attracted walkers from the Company, universities and well-wishers.

This year, the event took place in very different circumstances due to COVID-19 restrictions. The Walk, on 4th October 2020, along the River Thames from Bourne End to Cookham via Spade Oak Reach, was limited to six walkers in accordance with social distancing.



Led by the Master, Rob Casey, five volunteers from Thames Water and the Trust (captured above) completed the Walk and raised in excess of £4,500 through sponsorship for the Trust's Schools Programme.

Any Company Member can apply to the Water Conservation Trust for financial support for water and environment projects at their local schools. If you are a school governor and want to know more please contact Rob Casey.

Schools' responses to assistance from the Trust have been overwhelmingly positive, especially where expertise or resources are in short supply.

Previous *Charity Updates* are available at:
<http://www.waterconservators.org/charity-updates>

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The Schools Programme

The Trust supports three school clusters: in West Yorkshire, North Wales and London and, where possible, jointly plan multi-year development projects. Trustees also contribute to project delivery through advice and participation in events.

West Yorkshire: River Holme Connections' Riverfly Monitoring Project



River Holme

River Holme Connections have requested funding for their riverfly monitoring project. The project is being coordinated by Ella Scharff, a *Year in Industry Student* studying Marine Biology at University of Exeter, who will present the results of the year to students within the School of Biosciences at University of Exeter in September 2021.



Mayfly larva

Education Days in 2021. These *BioBlitz* events are expected to be attended by young people of school-age, who will carry out riverfly surveys. As part of the *Yellow Fish campaign*, the equipment will be used to demonstrate to school groups the importance of riverfly species as indicators of water quality.

It is expected that the operation and the data collected will benefit undergraduate students at University of Huddersfield. Changes in riverfly populations act as an indicator for changes in water quality and correlate with populations of fish and other vertebrates. The research also records the presence and absence of invasive species such as Killer Shrimp.

Data is shared with a national database as part of the Riverfly Partnership and is open access.

North Wales: Biking at Ysgol y Gogarth

The focus of recent development grants to Ysgol Y Gogarth (Llandudno) and Ysgol Tir Morfa (Rhyl) was to support horticulture skills and, later, bike maintenance skills.

Assistant Headteacher (Gogarth) Jon Goodwin writes ..



'Cycling has been an absolute godsend during lockdown and afterwards – for socially distant, outdoor healthy exercise, perfect. The kit from the Trust has enabled us to carry out the necessary ongoing maintenance and involve the students in learning important skills to be able to do this.



From September onwards our curriculum will look different, with a focus on COVID safe activities. The outdoor community projects are perfect for this. With an environmental focus, this will help young people reconnect with the outdoors.

We will spend the annual Water Conservators grant on tools and resources to support the above projects, as well as some more outdoor coats and PPE to enable us to work outdoors through the autumn and winter.'

Phil Thomas, Deputy Headteacher (Tir Morfa), writes ...*'the Bicycle Project goes from strength to strength. Last Summer we saw three pupils attain the City and Guilds level 3 Cycle Maintenance qualification. This is the highest qualification that we offer as a special school.*

This year we hope to restore our polytunnel which was purchased by the Water Conservators some years ago. We use the polytunnel to grow and sell on plants and flowers. Unfortunately, it has been subjected to weather and vandalism and is in need of repair.

We would be delighted if the Water Conservators were able to continue their support of Ysgol Tir Morfa, specifically assisting with the repair of the polytunnel and purchasing further bike stands.

As ever, many thanks to you and all the Water Conservators for your support.'

Gogarth and Tir Morfa benefit from small multi-annual development grants overseen by Past Master Ivor Richards.

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London Schools: Engineering and Science

The Spring Charity Update reported that the Trust had linked with the Museum of Water and Steam to provide two initial educational visits for London primary schoolchildren. At £240 per visit these provide fantastic value supporting the Trust's aim of encouraging water related science and environmental learning in schools. In September 2020 the Trustees agreed to finance a third visit. This means that our three key schools, Hugh Myddelton, Winton and Sir John Cass's primary schools will be able to visit as soon as the current pandemic restrictions are lifted next year.

To expand the programme to include more schools we need Water Conservator members to use their links with companies in the water industry sector to encourage them to sponsor further schools. Please contact Trustee Rob Casey at rob.casey1@hotmail.com to help us develop this exciting programme.

As soon as the social restrictions are lifted, Company members will be invited to see for themselves the range of opportunities offered by the Museum as well as see some of the iconic beam engines in operation. Most Water



Conservators will recall the important part steam played in modern sanitation. The *Hathorn Davey Triple Expansion Engine* represents the most common type of pumping engine built for waterworks use after about 1900.

Spitalfields City Farm



Spitalfields City Farm is a city farm in the London Borough of Tower Hamlets, a short distance from Brick Lane. The farm was opened in 1978 on a 1.3-acre wasteland site that was a former railway goods depot. Initially an allotment site, it expanded to house animals, and became a charity in 1980

COVID-19 has provided a major challenge for many charities and Spitalfields City Farm has written to potential donors to ask for help. It appears that the Farm may be a useful base for educational visits from London primary schools. A meeting is planned to see what can be done.

The Universities Programme

Most of the 11 universities currently in this year's MSc Bursary Programme have been seriously affected by the COVID-19 pandemic. Effects include student hardship (including loss of part time employment by students supporting themselves through university) as well as restrictions on face to face learning and field trips. The support provided by the WCT has therefore been more valuable than ever and we have been open to providing additional support for bursary holders in specific need.

The bulk of our bursary schemes have continued with ever closer links being formed with our partner universities. Two have temporarily withdrawn from the Programme because they have not been able to identify a student where our bursary would make the difference between studying or not.

For the 2019-20 intake, two students have not completed their courses for reasons related to the Pandemic. Generally, practical aspects of the Masters courses, such as fieldwork in support of learning and dissertation topics, have been abandoned and courses restructured to maintain their academic standing. Dissertation topics have generally been confined to 'desk' studies.

Normally, the 2018-19 Dissertation prize-winners would have been invited to a Company function, usually the Election Court Luncheon in April 2020 and this could not happen.

However, eight postgraduate bursaries have been awarded for 2020-21 and the students are in place.

Clearly, as with the rest of the economy, there is some catching up to do when universities revert to normal operations. However, the relationships strengthened during these trying times bode well for the future and it is very encouraging to see the number of 'our' students now becoming Associate members of the Company (see below). We hope that they will find the Company a supportive and welcoming environment in what is a very unsettling time for young people.

Associate Membership Scheme The Trust supports its first Postgraduates



Justin Brassett
Wadham (Oxford)



Anne-Marie Palfry
Plymouth



Suzy Hill
Imperial

Trustees have agreed to finance the first-year Associate fees for university students who have previously benefited from support from the Trust.

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MSC Prize-winner 2020

The Water Conservators' Company makes an award to the student submitting the Best Dissertation in each of the Universities benefitting from our Bursary Programme.

This year, Imperial's choice was **Paul Grédigui** (see below) for his Thesis: "*Application of machine learning to waste management: mass and volume measurements for an improved characterisation of recyclable*".



The study looks at machine vision as an alternative to traditional methods for waste sorting and collaboration. The project has been done in collaboration with the start-up *Recycleye*, which aims, by merging AI and Robotics, to replicate the power of human vision to identify every item in entire waste streams - broken down by material, object, and even brand. This fast-growing company belongs to the Microsoft cohort 'AI for goods' and hopes to provide tools to achieve a circular economy at a much lower price, as shown below.

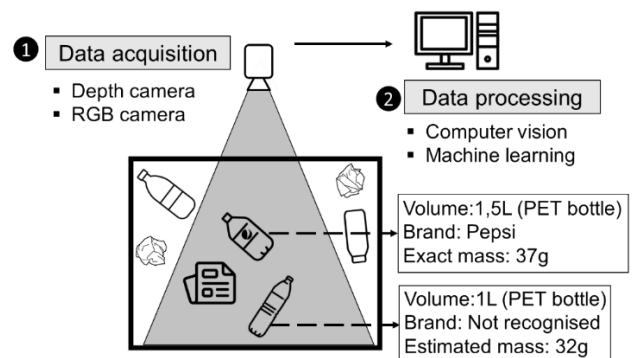


The study investigates how cameras can be used to measure the mass and the volume of waste. This information is essential as the market value is weighted based and needs to be recorded to interact with the waste buyers. Sampling can cost up to \$1,000 per ton, and only one sample of 60kg needs to be

analysed per 125 tons of mix material to comply with the regulation.

This new technology would provide a continuous feedback on the waste quality and quantity and lead to a data revolution in the waste industry. It would increase and improve the traceability which would ensure a better compliance with environmental standards and develop more advanced schemes.

The methodology used in the MSc Thesis is described in the diagram, and has been used to measure the mass of individual types of waste.



First, the volume is identified with a depth camera and the geometric properties of the objects. Then the brands of some waste have been identified: for example, Coca Cola, Heineken, Pepsi. If the brand, the volume and the waste types are identified the object can be identified and its mass calculated as well. When the brand was not recognized the mass needed to be estimated, the density has been calibrated using the *Recycleye* database or measurements performed on a waste recycling facility. Overall accuracy of 93% was obtained with varying lighting conditions, damaged and partially visible objects to detect the brand.

The aims of the technology developed in the Thesis and by *Recycleye* is to lower the price of waste sorting worldwide. It could also help developing countries to shift from manual waste sorting, often done in hazardous working conditions.

Such an increase in waste sorting in these countries could also be a game-changer concerning water pollution. Ten million tons of plastic enter the ocean per annum, ~50-70% of which comes from mismanaged municipal solid waste in developing countries, which shows the need for an improved waste management system. Moreover, the greenhouse gas emissions avoided by shifting to a circular economy will help to achieve the objectives of the Paris Agreement.

The Lord Mayor's Charity

The Trust donated £1,000 to the Lord Mayor's Charity. This year the four charities under the banner of *A Better City for All* are: Place2Be, Onside Youth Zone, The Samaritans, and the Duke of Edinburgh's Award.

Student EATS in 2020-21

Trustees have supported the Student EATS Programme for several years because it widens student and local community understanding of water-related challenges. Applications for 2021 from student bodies will be assessed by the NUS in November and the best applications will be sent to the Trust.

Some 2020 projects have been delayed but the NUS hopes that all projects will be completed by mid-2021.