



Litter Trackers: a message in a bottle

BOYS EXAMINE THE
MESSAGE IN THE BOTTLE

It's a common sight in many a Melbourne street: cigarette butts and other discarded items littering the pavement. According to the City of Melbourne, cigarette butts make up about one-third of the one billion items of litter entering Melbourne's waterways each year, and they can take up to 15 years to break down. The other two-thirds of litter includes plastic bottles, plastic wrapping, polystyrene packaging and aluminium cans.

RMIT University says 95 per cent of litter transported through stormwater drains into rivers, ultimately ends up

on beaches in Port Phillip Bay. An article in *The Age* in late July revealed that an estimated 1.4 billion pieces of rubbish flow into the sea annually from the Yarra and Maribyrnong Rivers.

To help reduce the volume of litter entering our bays, RMIT University has created 'Litter Trackers'. It's a project aiming to educate the community about the environmental impact of litter entering our waterways.

Early in Term 3, some young Scotch boys were caught on camera throwing plastic bottles into Watts

PRODUCED FOR THE
SCOTCH COLLEGE COUNCIL'S
PROPERTY COMMITTEE.

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River, Healesville. But before any conclusions are jumped to, the bottle throwing was actually done in a good environmental cause as part of the Litter Trackers project.

It's fair to say the boys did have some instinctive misgivings about throwing plastic items into a river, but they realised the cause was a good one. The plastic bottles each contained a GPS device, and in all, 100 bottles containing GPS devices have been launched into creeks, rivers and other bodies of water throughout Victoria. In a kind of 'message in a bottle exercise', the bottles will be tracked for a month

and then collected for research.


The bottles might be trapped in vegetation along creeks or rivers, or travel right through to the sea, but the project will indicate what happens to water-borne litter – how far it travels and at what speed, and where it accumulates.

Before the boys launched their bottles into the river, a scientist from RMIT University and a representative of Healesville Environmental Watch spoke to them about the impact litter has on the environment; and before despatching the bottles, the boys collected litter in the Watts River vicinity.

AFTER A LITTLE TREPIDATION (BELOW), THE BOYS THROW THEIR BOTTLES INTO WATTS RIVER AT HEALESVILLE (ABOVE).



LACHLAN WILLIAMS FINE-TUNES HIS HYDROPONIC DEVICE



A 21st century boost for an ancient technique

Hydroponics – cultivating plants by placing their roots in liquid nutrient solutions rather than soil – has a long history. The Hanging Gardens of Babylon, one of the Seven Wonders of the Ancient World, were sustained by an elaborate system using mineral-rich water from the Euphrates River, and ancient Egyptian hieroglyphics show plants being cultivated along the Nile River without soil.

A Year 12 Scotch boy, Lachlan Williams, is basing a project on the same principle – but with a definite 21st century twist. Lachlan has developed an ingenious hydroponic system for home gardens, powered by a platform of solar panels which track the movement of the sun.

Lachlan has developed the project as part of his Systems Engineering studies in the Spencer Centre for Design and Technology. He told *Environs* that sustainability and trying to reduce the use of resources is an area of particular interest to him.

‘For my VCE Systems Engineering project I am designing and manufacturing a project incorporating sustainable energy,’ he said. ‘My project consists of a solar array that angles itself towards the sun, maximising the efficiency of the solar panels.’ This allows maximum light and heat to reach the plants, encouraging rapid growth.

‘In order to sense the sun’s relative position, light dependent resistors will be employed,’ Lachlan said. ‘Data will be relayed to the microprocessor and a series of commands will then be sent to four motors, which will drive the platform to turn towards the sun.’

Lachlan believes the project will also help to widen awareness of the benefits of using renewable energy. ‘This will be achieved by ensuring that they become commonplace technologies in our day-to-day living. I anticipate that all residential areas will one day be using similar technology, and non-renewables will ultimately be phased out.’



Sitting proudly at the very centre of the beating heart of Scotch College – the Quadrangle – is a weeping elm (*Ulmus glabra camperdownii*), a beautiful tree providing shade in the summer and presenting an attractive profile once it has lost its leaves in winter.

Appropriately, this species of elm was discovered in a forest in Dundee, Scotland, about 1835. The young tree was replanted in the grounds of Camperdown House in Dundee, where it is still growing.

Scotch's weeping elm is not nearly as old as the Dundee specimen, but it is no seedling. Exactly when it was planted is unknown, but it is put at about 1935. Scotch's School Captain of that year, Bill Morgan – now the School's oldest known living Old Boy at 104 – says the tree was planted during his time at Scotch, and the boys named it 'Topsy' in honour of the then tuckshop manager, Miss 'Topsy' Kniebusch.

The elm is surrounded by a circular bench, donated by the Class of 1996, and it is a popular meeting place for boys, especially when they can enjoy the elm's shade on warm, sunny days.

The tree is thriving today, but it hasn't always been the case. It was nearly defoliated in the summer of 2017 when local wildlife chewed the outer layer of bark, reducing the number of new shoots in spring 2018. To counter this, Scotch's Grounds staff placed

'Topsy' and other notable Scotch trees



ABOVE: TOPSY, THE WEeping ELM IN THE QUADRANGLE, WHICH WAS PLANTED IN ABOUT 1935.
BELOW: MONASH DRIVE IN WINTER



ABOVE FROM LEFT: THE CEDAR IN THE LITTLEJOHN MEMORIAL CHAPEL ROUNDABOUT. A RIVER RED GUM NEAR THE CARDINAL PAVILION. THE SMALL GALLIPOLI OAK NEAR THE ROWING TRAINING POOL. BELOW: THE GALLIPOLI PINE, ALSO NEAR THE ROWING TRAINING POOL



snug-fitting plastic protective barriers round the elm's trunk, and the tree is now flourishing once more.

Among other notable trees or groups of trees around the Scotch campus are:

- The Lone Pine, a descendant of the famous Lone Pine on Gallipoli, planted in 1994 next to the Mearns Oval near the rowing training pool;
- The Gallipoli Oak, propagated from an acorn from the Gallipoli Oak at the Shrine of Remembrance, Melbourne, planted in 2015 and also near the rowing training pool;
- The ancient river red gums near the Montgomery Sports Field, Gardiners Creek and the Yarra River;
- The elm trees lining Monash Drive, planted in 1936;
- A cedar tree in the Chapel roundabout, donated in 1936 by the School Captain of that year, George Harvey Nicholson.

A major initiative: reducing materials going to landfill

Scotch has taken important steps to ensure that recyclables are clearly separated from general waste in shared staff areas across the campus. It's the latest initiative in Scotch's 'War on Waste', and part of a concerted effort to significantly reduce the amount of material the School sends to landfill.

Scotch is also introducing a new program, known as Simply Cups, which ultimately aims to divert as many as possible of the 100,000 paper cups used annually on the campus – whether or not the cups are biodegradable – from being taken to landfill.



COLOUR-CODED BINS HAVE BEEN PLACED IN SHARED STAFF AREAS AT THE SCHOOL



In Scotch's offices, most staff members previously had one small bin under their desks for all waste items, including recyclable items such as paper and cardboard, and the entire contents of the bins were sent to landfill. Now colour-coded bins have been placed in shared staff areas, and staff have been invited to participate in a short workshop to inform them of the purpose of each bin. Red bins are for material going to landfill, yellow bins are for rinsed recyclable glass, cans and plastic containers, and blue bins are for paper and cardboard.

Facilities Manager Elliot Green said Scotch aimed to reduce material going to landfill from its campus by more than 60 per cent, to meet industry standards. 'I really think we can do it by making sure we separate our waste into its appropriate streams,' Elliot told *Environs*.

'We just need to be fully aware of which bin to choose to deposit the waste – red, yellow or blue – and keep in mind that just five per cent of incorrectly allocated waste will mean the entire contents of a bin containing recyclable materials will be sent to landfill.'



ABOVE: THE SIMPLY CUPS PROGRAM HAS BEEN INTRODUCED AT SCOTCH.

SIMPLY CUPS

The Simply Cups program has been introduced in the Lithgow (Staff) Common Room at Scotch. A unit consisting of three cylinders and a set of instructions has been set up, and staff members are being encouraged to 'flip, tip and slip':

FLIP – the plastic lid of the cup into a central collection cylinder

TIP – the remaining contents of the cup into a sink

SLIP – the paper cup into one of the other two labelled collection cylinders.

Paper cups collected through the Simply Cups program will be sent to a manufacturer to be combined with other recyclable plastics, and moulded into products such as



bench seating, car park bump stops and even reusable KeepCups, which are a very environmentally-friendly alternative to paper cups.

If the Simply Cups program in the Lithgow Common Room is successful Scotch plans to introduce the program in all staff areas throughout the campus.

Is urbanisation making a splash?



MATTHEW CALLAGHAN (LEFT, YEAR 8) HOLDS A 3D PRINTED FILTER HOLDER, CENTRE MAX MUDGE (YEAR 7) HOLDS A WATER PUMP AND RIGHT ASHWIN APPU (YEAR 8) HOLDS THE LAB IN A BUCKET.

From the iconic Yarra River to the small local creek in your favourite park, Melbourne certainly has a complex system of waterways. It's common for many major new housing projects in Australia to include the central feature of a lake or wetland. These oases are scenic, and pleasant features for residents; and they frequently take centre stage in real estate advertising brochures.

But the serene lake surfaces may mask a serious risk. How good is the quality of the water? Are they sinks for pollution, potentially posing risks to public health and local fauna? Or do they play a key role in removing the dross of urban life before it spills into Port Phillip Bay?

A group of Scotch Years 7 and 8 boys wants to find out. The boys are participating in WATERisLIFE, a global

project that calls on young people to tackle emerging water issues around Australia and worldwide. Among the boys' first projects has been surveying water quality in urban Melbourne, in particular tracking chemical contaminants and microplastics from their sources in our suburbs as they flow towards the bay.

If the amount of contamination in the bay were to rise – even a little bit – our beautiful Port Phillip Bay could change from striking blue to bright green over the next century.

At weekends, equipped with a lab in a bucket, the boys will collect samples in the field to answer their questions. They will document their findings from across Melbourne, along with the results of other research they undertake as part of the WATERisLIFE project. Next year they will travel to Miami, USA, to present the results at a WATERisLIFE conference. Looking further ahead, the boys will be key participants in the very first WATERisLIFE conference to be hosted in the southern hemisphere, right here at Scotch.

WATERisLIFE enables students to collaborate globally to achieve the aims of the United Nations Sustainable Development Goals, and ensure that clean, healthy water is available everywhere for people and the environment. Scotch boys are forming an international project team with students from Maurick College, in the Netherlands.



Scotch's green cleaning program



HAZARDOUS CHEMICALS IN CLEANING PRODUCTS CAN POLLUTE PORT PHILLIP BAY

Scotch is acutely aware that chemicals used for cleaning on our campus which may be washed down drains will end up in Melbourne's sewerage system.

After the wastewater and sewage are treated, the cleansed water is discharged into Port Phillip Bay. But some hazardous chemicals in cleaning products can pass through the system unchanged and pollute the bay.

Many years ago Scotch adopted a campus-wide cleaning program known as 'Huntergreen', under which the School uses only environmentally friendly

cleaning products which meet a very stringent standard of sustainability. Huntergreen is an initiative of Hunter Industrials, an Australian-owned company which supplies readily biodegradable cleaning chemicals to hundreds of schools across Victoria and NSW, including Scotch.

The School has a 'green cleaning manual' which sets out the products which should be chosen for optimal benefits to the environment.