



Learning comes to life in a pristine environment

In Term 2, two classes of Year 3 boys from Scotch made several visits to Elliott Lodge, Scotch's 80 hectare property near Healesville, to explore the topic of 'Water', under the guidance of Year 3 Coordinator, Mr Steve Grbac.

With Chum Creek running through the property, the boys studied the habitat and health of the creek and its surroundings, focusing on the macro invertebrates (such as insect larvae, beetles and snails) which make the creek their home.

Using nets, buckets, trays, magnifying glasses and dissectors, all borrowed from Senior School Head of Science, Matt Manning, and his generous Science Department, the boys learned much about the local aquatic and terrestrial life.

They drew birdseye views of the property, measured trees, and had an environmental 'scavenger hunt', among other interesting and rewarding activities.

During one visit to Elliott Lodge in April, Melbourne Water engineer Mr Simon Pearce Higgins (father of Alex in Year 7), spoke to the boys about Melbourne's water supply, and Senior School Science staff have also come along to help the boys in their investigations.

Steve Grbac said the boys and staff have thoroughly enjoyed their time at Elliott Lodge. 'They look forward enthusiastically to each visit to this beautiful, pristine environment.'

ABOVE: Year 3 boys at Elliott Lodge, Healesville, where they have studied the habitat and health of Chum Creek and its surroundings.

In this edition

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ABOVE and RIGHT: The green roof of the Sir Zelman Cowen Centre for Science.

Centre for Science – exemplifying environmental sustainability

As the new Sir Zelman Cowen Centre for Science takes shape at the western end of Morrison Street, excitement is building about the huge potential for the advancement of science teaching at Scotch.



Appropriately, the new centre will exemplify environmental sustainability on the Scotch campus. For example, the centre will feature solar, wind and rainwater harvesting, which will provide significant environmental benefits by helping to reduce power load and energy consumption.

Boys will be able to monitor the energy savings on interactive screens in the centre's Atrium, which will show energy consumption, and record the power which has been generated from solar, wind and rain harvesting.

Scotch's own rain garden

Rainwater run-off from the car park at the western end of Morrison Street is now being filtered through a rain garden next to the car park on the northern side of the street.

The rainwater channelled into the garden slowly permeates through layers of soil, removing pollutants such as heavy metals and sediments. The cleansed water flows into stormwater drains and on into the Yarra River.

Scotch Curator Michael Smith said his team planted Australian native shrubs in the rain garden during the Term 2 holidays, to further enhance the filtration process. The plants will help to remove nutrients from the water, sustain microbial populations involved in biofiltration, and return moisture to the atmosphere through transpiration.

The rain garden is similar to an installation at the river end of Hambleton Road.



ABOVE: David Kingsley of the Scotch Grounds department working in the rain garden.



Energy efficiency through lighting upgrades

ABOVE: Redundant 400w metal halide light globes.

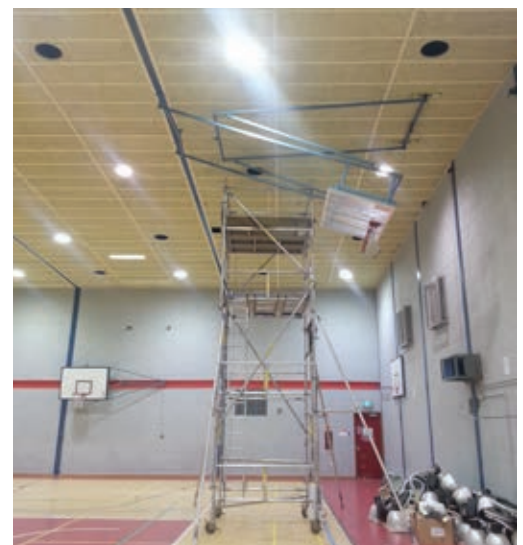
Imagine this situation: Scotch boys deep in concentration during a VCE exam in the upper gym of the Glenn Centre. Suddenly there is a power failure, plunging the gym into darkness except for the emergency lighting: concentration is interrupted, the exam disrupted, and all is at a standstill until power is restored.

Fast forward to today. Recent upgrades to lighting in the Glenn Centre's upper gym have included the installation of a new switch panel, enabling the instant connection of a back-up generator for use during

power failures. Lighting can now be restored within 10 seconds.

Upgrades to lighting in the Glenn Centre have also included installing light-emitting diode (LED) hi-bay light fittings in both the upper gym (July 2014) and lower gym (March 2015). LED lights are super energy efficient and long-lasting, using approximately 85 per cent less energy than halogen or incandescent lighting.

Earlier this year the Language Centre at Scotch was also fitted out with LED lighting.



ABOVE: Mobile scaffold tower used for removal of old metal halide lights and installation of new LED lights in the upper gym of the Glenn Centre.



ABOVE: Dr Perran Cook from Monash University's Science faculty and a student take samples from the Yarra River during cable bacteria research.

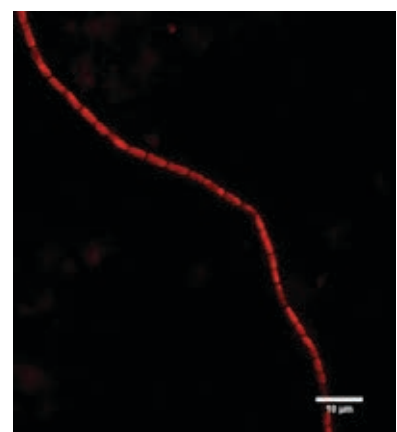
An electrifying, tiny new life form in the Yarra

Beneath the murky waters of the Yarra near the Scotch boat ramp, a new life form has emerged. Definitely not a rival in size to the legendary Loch Ness Monster, the new life form is considerably less than one millimetre in size.

The organisms are known as 'cable bacteria' because they can grow into tiny insulated cables, which despite their microscopic size actually conduct electricity over distances of a few centimetres.

In the Yarra, the food source for these organisms (hydrogen sulfide in the sediment on the river bed) is separated from the oxygen source (at the river's surface) by several centimetres.

Why have such creatures evolved? In these circumstances, there is an evolutionary incentive to grow wires to connect the food and oxygen sources, rather than wait for the hydrogen sulfide to slowly diffuse to the surface where it mixes with oxygen and can be consumed.



ABOVE: Magnified image of cable bacteria.

Photo credit: Sylvia Hidalgo, Netherlands Institute of Oceanography



River redgum regeneration

Scotch boys in the Conservation Group – consisting of Year 11 and 12 boys who participate in a range of conservation activities – have collected seeds from the beautiful native trees on the Scotch campus, including the magnificent river redgums (*Eucalyptus camaldulensis*) growing near the Montgomery tennis and hockey courts.

These very old trees pre-date Scotch's establishment on the Hawthorn Glen site in the early 20th century.

The redgum seedlings will be planted on the Scotch campus, with the aim of preserving the redgums' unique genetic diversity. This is most important, given the removal over the years of so much of the original vegetation in Scotch's neighbourhood. The young redgums should adapt well to the specific soil, climate and conditions of the Scotch site.

ABOVE: Riley Tilbrook (left) and Jack Davis, both of Year 12, with young trees ready to be planted out in their new home.

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