

Split-Stream approach to greywater management for Houseboats on SA inland waters

In March 2012 the South Australian Environment Protection Authority (EPA) acting on a request from the Houseboat Hirers Association (HHA) agreed to 'separation of the galley/dishwasher greywater to a containment tank with the remainder of the greywater produced on board treated', whereas previously *total* containment or *total* treatment had been insisted upon for commercial vessels.

HHA members then installed GatorPro and Matala domestic greywater filter units with added bromine 'spa' tablet disinfection, to trial handling of the bathroom water stream on both 6 and 4 berth vessels. Following successful output-only testing, a third unit was installed on a 10-berth vessel in August 2014.

In response to EPA's request for an alternative to these 60 ltr rectangular black 'poly' boxes for smaller vessels, a lower profile tubular PVC device was developed. The 150-mm diameter, 10 ltr prototype installed on a 4-berth vessel in July 2015 was tested with full input and output volumes collected from two showering, hair/hand washing, teeth cleaning and shaving sessions. This is the first known attempt to characterise real houseboat bathroom water output, rather than adopt theoretical 'formulations' for domestic household including an inappropriate +40% laundry component. Using the same low Nitrogen and Phosphorus toiletries as applied in parallel synthetic-mix laboratory tests being conducted by EPA, these nutrients were well below allowed discharge levels and thus required no reduction at all. Grease & Oil and Enterococci bacteria were above synthetic-mix ranges but together with Suspended Solids were reduced to below *Code* discharge levels for a fully compliant outcome.

Storm Plastics are now manufacturing *GreyTubes* and two 225 mm diameter, 20 ltr units have been installed. 60 ltr models for 12 berth vessels are longer. Sustainable flows of 40 ltr/min have been demonstrated for units with 50 mm inlet /outlets. Meanwhile, the 'black boxes' also remain in service giving a cumulative 5+ yrs of experience by three operators on four vessels from Wentworth, NSW to Murray Bridge, SA.

At the time of writing (early June 2016) EPA is preparing 'Amended wastewater treatment protocols and guidelines for inland vessels in South Australia' – stipulating criteria such as materials of construction, device volume and disinfection dosage according to vessel berths, for application of this 'Reasonable and Practicable' greywater management strategy.

Ken Bampton, Vice Chairman HHA

