



Environment Protection Authority Victoria  
Attn: Director of Policy and Legislation  
GPO Box 4395  
Melbourne, Victoria 3001

31 October 2019

Dear Director,

### **Submission re: proposed Environmental Reference Standard**

The Port Phillip EcoCentre welcomes the opportunity to comment on the proposed Environmental Reference Standard (ERS).

#### **Who we are**

The Port Phillip EcoCentre (EcoCentre) is a leading community-managed organisation with a dedicated team of scientists, educators and volunteers, who design and implement innovative environmental programs. Our expertise is Port Phillip Bay health, its catchments and the urban ecology of Greater Melbourne, within the traditional lands and waters of the Kulin Nation. We deliver specialist education, scientific research and community action projects with over 250 cross-sector partners. We are the home of the Port Phillip Baykeeper, an independent voice for Port Phillip Bay. The Baykeeper is part of the International Waterkeeper Alliance, a global network of 340 grassroots-supported Waterkeepers in 44 countries. Since 2013, the EcoCentre has been conducting research into plastic pollution in Port Phillip Bay and its catchments. The most well-known part of this research is the quantification of microplastics pollution in the Maribyrnong and Yarra rivers<sup>1</sup>.

#### **A. The General Environmental Duty (GED)**

The GED is an important step on the road toward good environmental stewardship. The EcoCentre was involved in one of the EPA Inquiry working groups led by the Ministerial Advisory Committee in 2015 where we advocated for EPA to support business, industry and the wider community to improve environmental stewardship. We are pleased the Environment Protection Act 2017 (EP Act) was adapted in this direction and therefore agree that the proposed ERS should support the GED.

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<sup>1</sup> Charko, F., Blake, N., Kowalczyk, N., Johnstone, C., Seymore, A., Quek, Y. (2018) Microplastics in the Maribyrnong and Yarra Rivers, Melbourne, Australia. *Port Phillip EcoCentre publication*

## B. Sediments need to be added to the ERS

We appreciate the value of dividing water regions into different geographical areas, or **segments** which in the proposal include **surface water segments** and **groundwater segments**. However, we note that there is no reference to **sediments of rivers and bays**. We believe waterway sediments and the biota they accommodate are of fundamental importance to ecosystem health; and therefore must be recognised in the ERS. Further, we note that sediments are referred to in several places in the proposal; but there is no definition of sediments in the glossary. We offer the following observations to highlight the environmental implications of excluding sediments from the ERS.

### ***Illustrations of the effect of the omission of standards for sediment***

Port of Melbourne Operations Pty Ltd, a commercial operator managing the shipping channels in Port Phillip Bay and port facilities for commercial vessels will perform maintenance dredging works, around the clock in the Yarra estuary and Hobsons Bay from November 2019 to February 2020. These works will cause legacy metal pollutants in the sediment of the Yarra and the Bay to pollute the surface waters, with a high likelihood of impacting water quality. Contaminated sediment removed from the dredging site will be transported and deposited in a location off-shore from Mordialloc. As fishing, swimming and other recreational activities will be in high season at that time, there may be implications for human and environmental health.

#### *Example 1*

The resident colony of Little Penguins (*Eudyptula minor*) in St Kilda feeds on several species of small fish that spawn near the Yarra mouth (due to the less saline waters and higher concentrations of nutrients in that area), risking ingestion of metals through biomagnification up the food chain. In this time of year the penguins are also breeding, meaning contaminated fish may be fed to penguin chicks by their parents, allowing metals to biomagnify in the birds during their growth. Little penguins in Port Phillip Bay already have significantly higher levels of mercury and lead in their bodies compared to penguins on Phillip Island, and mercury concentrations peak in summer during the breeding season<sup>2</sup>. There is some evidence that higher mercury levels are causing shorter flipper length in the St Kilda colony, showing the physical effects of this pollution. To stir up mercury-contaminated sediment in the water column at this sensitive time of year potentially adds even more mercury to the penguins' blood and tissues.

When trying to refer to the proposed ERS standards with regards to the above situation, the lack of clear values and objectives around the importance of sediment was clearly showing. Sediment does not fall under the element of soil, as this is land-based, nor do the standards for surface water cover sediment adequately, i.e.: if the contaminated sediment from the dredging works would be labelled as 'waste', or 'contaminated soil', specific legislation around disposal methods would be triggered accordingly, none of which allow legally dumping them in Port Phillip Bay.

#### *Example 2*

Section 1.3 of the *Dredging Program 2012-22 Environmental Management Plan* (Port EMP) by Port of Melbourne Operations Pty Ltd states that "All sediments dredged from northern Port Phillip are deemed to be contaminated unless demonstrated otherwise" and "If sediments are determined

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<sup>2</sup> Finger, A., Lavers, J.L., Orbell, J.D., Dann, P., Nuggeoda, D. and Scarpaci, C., 2016. Seasonal variation and annual trends of metals and metalloids in the blood of the Little Penguin (*Eudyptula minor*). *Marine Pollution Bulletin*, 110(1), 261-273

to be uncontaminated and suitable for unconfined disposal they will be placed within the Port of Melbourne Dredged Material Ground or, subject to geotechnical parameters, utilised for ongoing bund construction and/or maintenance”<sup>3</sup>.

However, the Port EMP has no provisions for sediment testing to confirm contamination levels. Table 5 of the plan shows that apart from reporting noise and unexpected pollution events or hazards, there are no requirements for Port of Melbourne Operations Pty Ltd to report anything to the EPA, including whether or not sediments are contaminated. How do bay users and the general public ascertain if sediment is not contaminated, if there are no independent agencies like EPA to test and approve these types of works?

Although the Port EMP was approved by DELWP, there are no standards regarding contaminated sediments in DELWP’s *Port Phillip Bay Environment Management Plan 2017-2027*. Consequently, there is no provision for independent regulation to hold Port of Melbourne Operations Pty Ltd accountable. The Port of Melbourne Operations Pty Ltd is allowed to self-regulate and determine whether or not sediments are contaminated, and how and where they will dispose of them. None of the information on how, when or even if sediments are tested is publicly available.

In the last two years, the frequencies of fires in chemical factories and waste disposal sites -- and the environmentally disastrous waterway pollution events that followed – have clearly demonstrated that industry needs to be regulated. Self-regulation of commercial operators is not an effective tool to prevent pollution events.

**Recommendation 1:**

**The above two examples illustrate that currently there is no clear provision made for protecting sediment in the proposed ERS, nor does it give guidance as to the responsible handling of contaminated sediments. The examples emphasise the importance of adding standards for the element of sediment to the ERS.**

***Additional reasons why sediment should be added to the ERS***

- 1) The sediments of rivers and bays are an important part of a healthy environment and of surface waters in particular. Seagrass, algae, microbes and benthic invertebrates all play an important role in keeping the water quality suitable for biodiversity, fishing, aquaculture, recreation and human health. The nitrogen fixation cycles in Westernport Bay and specifically the denitrification cycles in Port Phillip Bay provide essential ecosystem services to the state of Victoria. The value of the denitrification services that Port Phillip Bay provides is estimated at \$11 billion per year<sup>4</sup>.
  
- 2) A crucial element of the sediment ecosystem in both Port Phillip and Westernport Bays is seagrass. As summarised in the *2016 State of the Bays* report by the Commissioner for Environment and Sustainability, the ecosystem services that seagrass beds provide are:
  - Providing fish and shellfish for food and commerce (\$6.1 million per year)

<sup>3</sup> <https://www.portofmelbourne.com/wp-content/uploads/DP12-22-EMP-Rev-6.pdf>

<sup>4</sup> DELWP (2017) Port Phillip Bay Environmental Management Plan 2017-2027 Supporting Document. *Victoria State Government*

- Increasing biodiversity, including commercial fish species, by providing a nursery function
- Nutrient resources for aquaculture (a \$25.4 million per year industry<sup>5</sup>)
- Climate regulation by storing and sequestering carbon dioxide (54% of Victoria's blue carbon stock is bound in seagrass, with an estimated 280,700 tonnes stored, worth \$2.9-16 million)
- Water cycle regulation, including oxygenation of water, nitrogen fixation, erosion prevention, sediment stabilisation and nutrient absorption
- Spiritual and cultural value to Aboriginal Australians
- Recreation opportunities for the Victorian population

Vegetated coastal habitats – seagrasses, saltmarshes and mangroves – bury carbon at a rate 35–57 times faster than tropical rainforests and can store carbon for thousands of years<sup>6</sup>. Since the EPA intends to include objectives for carbon dioxide in the ERS, reflecting the Victorian people's values around action on climate change, the sediment that seagrass beds are a part of needs to be protected.

- 3) Fraser *et al.* (2017) found that seagrasses were declining even in ecosystems experiencing increased water quality, suggesting that both sediment and surface water health (not water quality alone) play a key part in the survival and re-colonisation success of seagrass<sup>7</sup>.

**Recommendation 2:**

**To add to the advice by the Commissioner for Better Regulation, Appendix A of the Impact Assessment of the proposed Environmental Reference Standard, we recommend that sediment is added in the following manner:**

**The proposed environmental values for sediment are:**

- **Sediment dependent ecosystems and species**
- **Human consumption of aquatic foods**
- **Water-based recreation**
- **Nitrogen cycle ecosystem services**
- **Climate change mitigation** (refer also to section D in this submission)

## **C. Plastic and microplastics as pollutants of surface waters**

As a result of the EcoCentre's submission to the *State Environment Protection Policy* for water (SEPP (Waters)) update in 2018, plastic, including microplastics, was added to the list of recognised waterway pollutants. As the cornerstone of the EP Act is the GED and the ERS will be replacing part of the SEPP (Waters), provisions should be made in the ERS to set standards that

<sup>5</sup> <http://agriculture.vic.gov.au/agriculture/fisheries>

<sup>6</sup> Commissioner for Environment & Sustainability Victoria (2016) State of the Bays 2016. *Victoria State Government*

<sup>7</sup> Fraser, M. W., Kendrick, G. A. (2017) Belowground stressors and long-term seagrass declines in a historically degraded seagrass ecosystem after improved water quality. *Nature Scientific Reports* 7: 14469

can help hold industry accountable for preventing contamination of surface waters by plastics and microplastics. We refer to nurdles (plastic pre-production pellets) and polystyrene in particular.

Nurdles are a known problem in Victorian waterways. From 2014 to today, Port Phillip EcoCentre and Tangaroa Blue Foundation have conducted over 100 site surveys of plastic manufacturers in greater Melbourne, of which the overwhelming majority proved to contaminate the public land around their plant with nurdles. Nurdles can't be classified as litter, as they are primary rather than secondary plastics and are lost by industry, which makes them industrial pollution. As has been proven by the successful implementation of *Operation Cleansweep*<sup>8</sup> by several plastic manufacturers and Tangaroa Blue Foundation, nurdle spills are easy to prevent and clean up. This shows that the 'risk minimisation is reasonably practicable', as stated under the new EP Act and GED.

Polystyrene is a second plastic pollution that is ubiquitous in waterways and on land. Our latest research shows that of the 1.4 billion pieces of plastic pollution reaching the Bay annually from the surface of the Yarra and Maribyrnong rivers, 18% is polystyrene. It is the second most polluting plastic item in the Yarra and the third most polluting item in the Maribyrnong. Although it is harder to track polystyrene back to one particular industry, we are currently in the process of collecting evidence which may reveal that a major contributor is the construction industry, via building sites across metropolitan Melbourne. As with nurdles, this makes at least part of the polystyrene pollution an industrial pollution.

**Recommendation 3:**

**Based on the above, and in addition to recommending that *Operation Cleansweep* becomes a mandatory program for any industry using nurdles, we propose that the ERS support the GED cornerstone of the EP Act by adding indicators and objectives for surface waters that reflect standards for plastic and other man-made solid pollution (with 0 being the acceptable levels), to minimise risk of harm to humans and the environment, as defined by the EP Act.**

## D. Climate change mitigation

The EPA's function is 'to protect Victoria's environment and people from the harmful effects of pollution and waste'. There is currently no greater harmful effect to people and the environment than climate change, caused by the pollution and waste of greenhouse gases.

We are not convinced that the proposed ERS has the proper standards that will help deliver the long-term emissions reduction target of net zero greenhouse gas emissions by 2050, targets which were legislated in the *Climate Change Act 2017*.

In addition, in our submission to the *Proposed Interim Emissions Targets for Victoria*<sup>9</sup> we urge the Victorian Government to set Interim Targets that achieve the required trajectory for capping warming to 1.5 degrees Celsius.

<sup>8</sup> [www.operationcleansweep.org.au](http://www.operationcleansweep.org.au)

<sup>9</sup> <https://ecocentre.com/submissions>

**Recommendation 4:**

**Include clear standards to mitigate climate change, which include objectives that support the Climate Change Act 2017 and Emissions Targets that cap global warming to 1.5 degrees Celsius.**

## **E. Clarifications requested**

The questions below refer to the different documents released by EPA for the consultation.

- 1) Refer to Impact Assessment, Chapter 4 – ERS standards for water, page 71
  - a. *To what do the ‘surface water segments’ refer?*
  - b. *What practical purpose do ‘surface water segments’ provide, and how will they be used?*
- 2) Refer to Impact Assessment, Chapter 4– ERS standards for water, page 72;  
Refer to the proposed ERS - table 6 Environmental values of marine and estuary waters, page 30
  - a. *How can ‘Water dependent ecosystems and species’ (environmental value) be unmodified or modified?*
  - b. *The dredging plume of dredging works to be conducted from November 2019 to February 2020 in the Yarra and Bay will most likely affect water quality in the Hobsons Bay segment, possibly with sediments contaminated by legacy metals and other pollutants. The text indicates this segment has the environmental values ‘Human consumption of aquatic foods’ and ‘Water-based recreation (primary contact)’. How will water quality be monitored for human safety during and after the dredging works, as the works will take place in the recreational high season?*
  - c. *The spoil grounds for contaminated sediments from the above dredging works are located in the Central-East segment. What is the reason that this area has been labelled ‘Largely unmodified’, despite this?*
  - d. *Several tables list the acronym DGV on numerous occasions, but this acronym does not appear in the glossary. What does it mean?*

We are looking forward to receiving your reply.

Sincerely,



April Seymore  
Executive Officer