Microplastic pollution in Melbourne's waterways: Existing legal solutions

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PORT PHILLIP ecocentre

ENVIRONMENTAL JUSTICE AUSTRALIA

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prepared by
Environmental Justice Australia
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Submitted to:

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1 INTRODUCTION

While our knowledge of the impact of plastics in our oceans is incomplete, what we already know shows we should not wait before taking action.

United Nations Environment Programme[1]

The presence of plastic litter and microplastics in the marine environment is recognised as an issue of global concern.[2] From deep ocean basins to our own local waterways, plastic pollution has increased in recent years, impacting all levels of the marine ecosystem with potentially devastating consequences.

Victoria's first baseline dataset of microplastic pollution in the Yarra and Maribyrnong rivers and Port Phillip Bay beaches was gathered in 2017–2020.[3] It estimated nearly 2.5 billion pieces of plastic flow into Port Phillip Bay annually from the surface waters of the Yarra and Maribyrnong rivers, of which over 2 billion are microplastics. Litter is also increasing in both rivers.

Citizen scientists continue to gather data on the sources and extent of microplastic pollution. Recent data show microplastic pollution from plastic industry operators continues to be a problem.[4]

Addressing microplastic pollution requires systemic change, including drastic improvements in product stewardship and a transition to a circular economy. Complementary to that systemic change, it is critically important to use existing environmental protection laws to prevent plastics entering the marine environment.[5]

This report sets out measures that the Victorian Environment Protection Authority (**EPA**), as the State's regulator of pollution and waste, can and should adopt now to prevent certain types of plastics pollution (including from certain sources) entering the freshwater and marine environment.

For reasons set out below, this report focuses primarily on plastic industry operators whose activities are linked to pollution from plastic feedstock, including plastic resin pellets (PRPs). However, it also extends to plastic pollution more broadly and the responsibilities of all Victorians to prevent plastics entering the freshwater and marine environment.

1. United Nations Environment Programme, Marine Plastic Debris & Microplastics: Global lessons and research to inspire action and guide policy change (2016) <https://wedocs.unep.org/20.500.11822/7720> x.
2. United Nation Environment Program resolution on marine plastic litter and microplastics (27 May 2026) <https://wedocs.unep.org/20.500.11822/11186> 2, Cl 2; See also: Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Part 3* (2021) <https://www.ces.vic.gov.au/publications-library/state-marine-and-coastal-environment-2021-report> 42, which identifies microplastics as a contaminant of emerging concern.
3. Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Parts 1 and 2* (2021) <https://www.ces.vic.gov.au/publications-library/state-marine-and-coastal-environment-2021-report> 45, citing Fam Charko et al, *Clean Bay Blueprint: Microplastics in Melbourne* (2020) <https://ecocentre.com/sites/default/files/images/Documents/Programs/Baykeeper/EcoCentre_CleanBayBlueprint_FinalEdits%20(2).pdf>.
4. See this report below, Part 2.3 'Latest Science'.
5. See: Commonwealth of Australia, Senate: Environment and Communications References Committee, *Toxic tide: the threat of marine plastic pollution in Australia* (April 2016) <https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Marine_plastics/Report> 155.

Scientists, industry and trained volunteers preparing to audit stormwater drain contents from across Greater Melbourne

Citizen scientists have gathered a significant amount of data demonstrating the pervasiveness, mobility and persistence of microplastic pollution in Melbourne's urban water catchments and the major downstream 'receiving environment', Port Phillip Bay.

Microplastics are pieces of plastic smaller than 5 mm in diameter. Some microplastics are purposefully manufactured for industrial and domestic purposes ('primary' microplastics), while other microplastics are created by the weathering and fragmentation of larger plastic objects ('secondary' microplastics).[6]

Plastic feedstock, including plastic resin pellets, is a subcategory of primary microplastics. Plastic feedstock is the pre-fabrication material used in the manufacture of plastic products.[7] It includes raw material such as resin pellets, flakes, powder and recycled chips used to make plastic products.

Plastic feedstock is regularly spilled on loading bays and driveways and often incompletely, or not at all, recovered after a spill. This form of pollution then migrates into urban drains and stormwater systems that discharge into the freshwater and marine environment.

6 Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Part 3* (2021) 96-7.
7 See: NSW Environment Protection Authority, *Preventing plastic feedstock entering the environment* (10 May 2024) <https://www.epa.nsw.gov.au/your-environment/litter/targeted-programs/operation-clean-sweep/prevent-plastic-feedstock-entering-the-environment>.

2 MICROPLASTIC POLLUTION

Internationally, there is a significant body of research documenting the risks of harm to the environment from microplastic pollution.

2.1 RISKS OF HARM TO THE ENVIRONMENT

Internationally, there is a significant body of research documenting the risks of harm to the environment from microplastic pollution.

Risks of harm to the environment arise from microplastics entering freshwater and marine environments where they may be ingested by aquatic animals, with subsequent health impacts. The risks of harm from ingesting plastic feedstock include internal abrasion or blockage, and/or chemical damage.[8] These risks are exacerbated by microplastics, including plastic feedstock, adsorbing (and concentrating) persistent organic pollutants (**POPs**) on their surface.[9]

Citizen scientists have gathered a substantial body of evidence identifying the sources and extent of plastic feedstock pollution in the lower reaches of the Yarra and Maribyrnong Rivers which flow into Port Phillip Bay.

The data establishes the pollution pathway of plastic feedstock, including plastic resin pellets, entering freshwater and marine environments as follows:

a. **Site inspections at plastic industry facilities**

   Between July 2018 and June 2020, the Tangaroa Blue Foundation[10] undertook an extensive program of site inspections to build a picture of plastic feedstock loss from point sources.

   More than 500 site inspections were conducted at plastics industry operators across 17 local council areas. During site inspections, sites were rated using a Plastic Resin Pellet Rating Tool, with sites or parts of sites rated 1 (no pollution) to 5 (highly significant pollution) according to the level of pollution observed on the adjoining public land.

b. **Stormwater drain traps in industrial areas**

   Between July 2018 and June 2020, the Tangaroa Blue Foundation assessed the contents of nine stormwater drain traps, three installed in each of the cities of Greater Dandenong, Kingston and Wyndham, for the purposes of recording the amount of plastic feedstock escaping into the stormwater system. The contents of the traps were analysed at six-week intervals over the two-year period.

   Each trap was installed in an industrial area near an operating plastics facility where previous surveys had showed plastic feedstock loss occurring.

c. **Trawls in the Yarra and Maribyrnong rivers**

   Between January 2015 and February 2020, citizen scientists with the Port Phillip EcoCentre[11] conducted a total of 113 monthly trawls in the Yarra and Maribyrnong rivers using manta nets to measure microplastics on the surface waters.

8 See: Sumon Sarkar et al 'Microplastic Pollution: Chemical Characterization and Impact on Wildlife' *International Journal of Environmental Research and Public Health* 20(3) (2023) 1745; Nina Wootton et al, 'Low abundance of microplastics in commercially caught fish across southern Australia' *Environmental Pollution* 290 (2021) 118030; Sarah Nelms et al 'Investigating microplastic trophic transfer in marine top predators', *Environmental Pollution* 238 (2018) 999; Stephanie Wright et al, 'The physical impacts of microplastics on marine organisms: A review', *Environmental Pollution* 178 (2013) 483.

9 Julia Reisser et al, 'Marine Plastic Pollution in Waters around Australia: Characteristics, Concentrations, and Pathways' *Marine Plastic Pollution in Australia* 8 (2013) 11, 2; Rochman et al, 'Long-Term field measurement of sorption of organic contaminants to five types of plastic pellets: implications for plastic marine debris' *Environmental Science & Technology* 47 (2013) 1646.

10 See: <https://tangaroablue.org/about/> for information on the Tangaroa Blue Foundation.

11 See: <https://www.ecocentre.com/about-us/> for more information on the Port Philip EcoCentre.

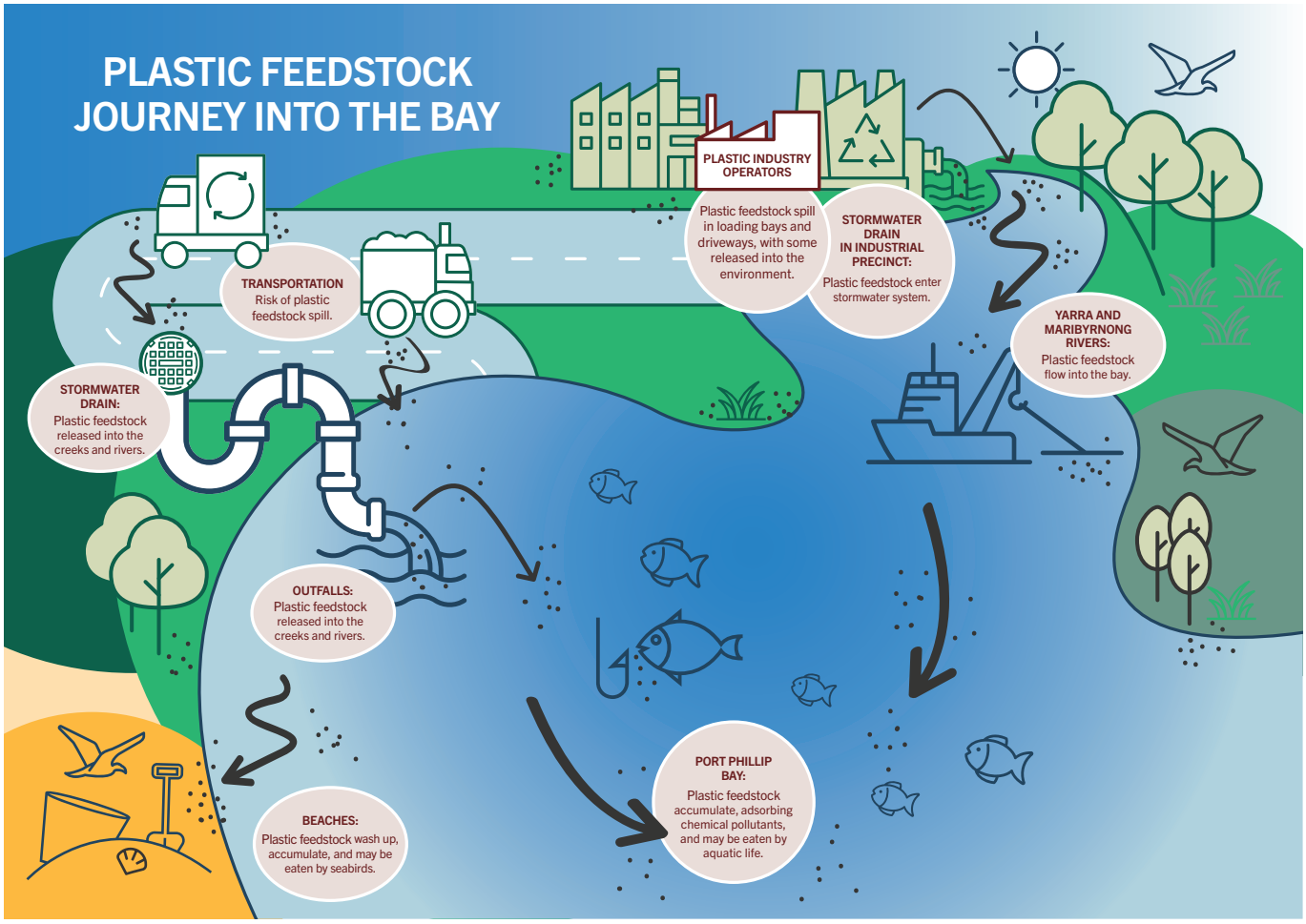
d. **Beach litter audits**

Between July 2017 and March 2020, a total of 117 beach litter audits were conducted at 12 beaches around Port Phillip Bay.

The data was collated and published in *Clean Bay Blueprint: Microplastics in Melbourne* (**Clean Bay Blueprint**)[12] as the 'first ever baseline dataset of microplastic pollution' in the Yarra and Maribyrnong Rivers and Port Phillip Bay beaches.[13] It has since been cited and relied upon in various Victorian Government publications, most notably the *State of the Marine and Coastal Environment 2021 Report*.[14]

Key findings include:

a. The number of litter items flowing into Port Phillip Bay from the Yarra and Maribyrnong river surfaces is estimated to be more than 2.5 billion items per year, of which approximately 2 billion (85%) are microplastics.[15]



12 Charko et al, *Clean Bay Blueprint: Microplastics in Melbourne* (2020) <https://ecocentre.com/sites/default/files/images/Documents/Programs/Baykeeper/EcoCentre_CleanBayBlueprint_FinalEdits%20(2).pdf>.

13 Commissioner for Environmental Sustainability Victoria, *Case Study: Clean Bay Blueprint – Microplastics in Melbourne* (8 December 2021) <https://www.ces.vic.gov.au/state-of-reports/state-marine-and-coastal-environment-2021-report/stories/clean-bay-blueprint>.

14 Cited in Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Parts 1 and 2* (2021) 45; and *Part 3* (2021) 95.

15 Charko et al, Clean Bay *Blueprint: Microplastics in Melbourne* (2020).

b. The problem is getting worse, with the observed amount of pollutants increasing in both the Yarra and Maribyrnong rivers.

c. Plastic feedstock, including plastic resin pellets, can be traced back to the premises of plastic industry operators, where it is spilled on loading bays and driveways and often incompletely or not at all recovered after a spill.

d. Plastic resin pellets are the number one microplastic type found on beaches around the Bay.[16]

Further to the body of evidence gathered by citizen scientists, various Victorian Government entities recognise the risk of plastic feedstock (and specifically plastic resin pellets):[17]

a. entering freshwater and marine environments (mainly through spills and mishandling at processing plants and during transport)

b. being eaten by aquatic and marine animals who can become sick or die, such as birds like penguins, gulls, and cormorants, as well as mammals like the rare Burrunan dolphin (endemic to Port Phillip Bay)[18]

c. attracting chemical pollutants to their surfaces, thereby acting as a pollutant vector through the food web[19]

d. entering the food chain and impacting human health.

In determining the risks of harm to the environment it is necessary to consider the concept of harm. The *Environment Protection Act 2017* defines harm to mean an adverse effect on human health or the environment (of whatever degree or duration). Harm may arise as a result of the cumulative effect of harm arising from an activity combined with harm arising from other activities or factors.[20]

This legal standard means that harm arising from an activity at any one site, facility, operator or location should (or, where relevant, must) be understood as combined with the harm/s arising from other sites, facilities, operators or locations and therefore as a component of cumulative harm.

Harm also requires consideration of the nature of the pollution. The durability of plastic, a characteristic that has made it commonplace in the modern world, means that plastics can remain in the environment for hundreds of years, accumulating in the environment over time.[21] Therefore, harm arising from an activity at any one site, facility, operator or location should also be understood as combined with the harm/s arising from earlier pollution incidents as a component of cumulative harm.

Microplastic pollution gives rise to cumulative harm spatially (accumulating from many distributed sources) and temporally (accumulating or compounding over time).

16 Ibid 35. Note: Plastic resin pellets can be traced back to the premises of plastic industry operators in a general sense, rather than to exact operators.
17 Environment Protection Authority Victoria, *Managing plastic feedstock: Fact sheet* (1 November 2024, Publication No. 1701.1) <https://www.epa.vic.gov.au/about-epa/publications/1701>.
18 Sustainability Victoria, *Microplastics and Port Phillip Bay (2019)* <https://www.sustainability.vic.gov.au/our-work/resourcesmart-schools/resourcesmart-schools-stories/recycling-knowledge-attitudes-and-behaviours-of-victorians/microplastics-citizen-science-project> 6.
19 Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Part 3* (2021) 97. See also: Tae Ohgaki et al, 'International pellet watch: Global monitoring of polybrominated diphenyl ethers (PBDEs) in plastic resin pellets', *Environmental Monitoring and Contaminants Research 1 (2021) 77.*
20 *Environment Protection Act 2017*, s 4.
21 Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Part 3* (2021) 96.

2.2 WAYS OF ELIMINATING OR REDUCING RISKS

Techniques to eliminate or reduce risks of harm to the environment or human health from plastic feedstock entering freshwater and marine systems are relatively well established.

For example, the best-practice program *Operation Clean Sweep* is promoted at the national level through the *National Plastics Plan 2021,*[22] at the state level through the EPA,[23] and across the plastics industry by various peak bodies (including Chemistry Australia, the Association of Rotational Moulders Australasia, and the Plastics Industry Pipe Association of Australia).[24]

The *Operation Clean Sweep* manual sets out how plastics industry operations managers can reduce the accidental loss of plastic resin pellets from all parts of the plastics value-chain into the environment, with a goal of 'zero pellet loss' for plastics industry operators or facilities.[25]

The EPA has published a factsheet to provide guidance to businesses that produce, manufacture, transport, store, handle, use, install and maintain plastic products and those that collect, recycle or dispose of plastic products and feedstock to assess and manage the risk of these materials escaping into the environment. The factsheet is general in its guidance but provides a high-level risk management framework for the management of plastic feedstock.[26]

Of the plastic industry operators monitored by citizen scientists, some are not spilling or leaking plastic resin pellets on the adjacent public land. The methods adopted by these well performing duty holders may also serve as a source of knowledge for others in the industry.

2.3 LATEST SCIENCE

Since 2020, when the first baseline dataset of microplastic pollution in the Yarra and Maribyrnong Rivers and Port Phillip Bay beaches was published, citizen scientists have continued to gather data on the sources and extent of plastic feedstock pollution.

The most recent (unpublished) dataset from the Port Philp EcoCentre and Tangaroa Blue Foundation confirms that plastic feedstock loss from plastic industry operators continues to be a problem.

2.3.1 Site inspections

Between November 2023 and May 2024, the Port Phillip EcoCentre and Tangaroa Blue Foundation conducted 22 site inspections targeting plastic industry operators. During site inspections, sites were rated using the Plastic Resin Pellet Rating Tool (that had been used to gather the original dataset and referred to above at 2.1a).

Of the 22 site inspections:

a. Six sites were assessed as having moderate plastic feedstock pollution (of 100–300 PRPs or 10–50 PRPs every 1m), with two sites assessed as having moderate feedstock pollution on multiple occasions.

b. Four sites were assessed as having significant plastic feedstock pollution (of 300–1000 PRPs or 1 PRP every 1cm), with one site assessed as having significant feedstock pollution on multiple occasions.

c. One site was assessed as having highly significant plastic resin pellet pollution (of more than 1000 PRPs or 2–10 PRPs every 1cm).

Some plastic industry operators were identified as 'repeat offenders', with four sites assessed as having moderate and/or significant plastic feedstock pollution on multiple occasions.

On 11 December 2023, pollution incidents observed on 9 December 2023 were reported to the EPA for five separate plastic industry operators assessed by citizen scientists as having

22 Department of Agriculture, Water and Environment, *National Plastics Plan 2021* (2021) <https://www.dcceew.gov.au/environment/protection/waste/publications/national-plastics-plan> 10.
23 Environment Protection Authority Victoria, *Managing plastic feedstock: Fact sheet* (1 November 2024, Publication No. 1701.1).
24 See: <https://www.chemistryaustralia.org.au/safety-environment/operation_clean_sweep>; <https://rotationalmoulding.com/rotomoulding/sustainability/operationcleansweep/> and <https://pipa.com.au/operation-clean-sweep/>.
25 *Operation Clean Sweep Australia: Program Manual* <https://www.opcleansweep.org.au/>.
26 See: Environment Protection Authority Victoria, *Managing plastic feedstock: Fact sheet* (1 November 2024, Publication No. 1701.1).

moderate and or significant plastic feedstock pollution. The pollution incident reports were lodged by staff at the Port Phillip EcoCentre using the EPA Interaction Portal[27] and accompanied by photographic evidence.

Citizen scientists conducted further site inspections for the five reported plastic industry operators. All five operators continued to spill and or leak plastic feedstock pollution *after* the pollution incident reports were made to the EPA in December 2023.

2.3.2 Stormwater drain trap audits

Between January and September 2024, the Tangaroa Blue Foundation undertook audits of stormwater drain traps in industrial areas in the municipalities of Greater Dandenong and Kingston at intervals of 8 weeks.[28]

Of the stormwater drain traps assessed:

a. On 36 audits, more than 100 items of plastic feedstock pollution were counted.

b. On 17 audits, more than 1,000 items of plastic feedstock pollution were found.

c. On three audits, more than 10,000 items of plastic feedstock pollution were found.

The results of the stormwater drain trap audits in industrial areas confirms that a substantial amount of plastic feedstock continues to escape into the Melbourne's stormwater system.

The findings above are further supported by the data recorded on the Australian Microplastics Assessment Project (**AUSMAP**). For example, data collected from May 2023 to May 2024 by citizen scientists consistently identified plastics pellet pollution in and around stormwater outfalls in Port Melbourne.[29]

27 See: <https://portal365.epa.vic.gov.au/pollution-report-form/>.
28 Data extracted from Tangaroa Blue Foundation Ltd, Australian Marine Debris Initiative Database.
29 See: <https://www.ausmap.org/hotspot-map> (accessed 30 October 2024).

3 LEGAL TOOLS

It is evident the GED alone is proving insufficient to eliminate or reduce the risk of harm to the environment arising from the storage, use and handling of plastic feedstock

The *Environment Protection Act 2017* (**EP Act 2017**) commenced in July 2021, providing a new framework for environmental protection.

The 'cornerstone' of the new framework is the general environmental duty (**GED**). It requires a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste to minimise those risks, so far as reasonably practicable.[30]

This standard means that persons or entities controlling or owning facilities whose operations may give rise to plastic feedstock, including plastic resin pellets, spilling into waterways are required to eliminate or reduce those risks so far as reasonably practicable.

Data and analysis available on plastic feedstock, including plastic resin pellets, strongly indicates that the obligation alone to comply with the GED is currently insufficient to prevent harm to the environment from this form of pollution. There seems to be no clear evidence the GED of itself and its administration (by the EPA or by duty-holders directly) is satisfactorily minimising the risk of harm. The evidence points in the other direction.

In circumstances where duty holders are failing to fulfil their duty to eliminate or reduce risks of harm from plastic feedstock pollution, there is a compelling case for the EPA to use additional tools available to it to prevent harm to the environment from this pollution source and to do so in accordance with its overarching statutory duty.[31]

The GED as a stand-alone legal duty is reinforced and or given more specific or prescriptive regulatory effect through a diverse selection of legal tools – known as 'general standards'[32] – to achieve the objectives and purposes of the *Environment Protection Act 2017* and support duty holders to meet their environmental obligations. The following section sets out three of these existing legal tools to better address the risks of harm arising from plastic pollution:

a. Permissions applying to plastic industry operators, focused on plastic feedstock, including plastic resin pellets.

b. A position statement to inform plastic industry operators, focused on plastic feedstock, including plastic resin pellets.

c. The Environmental Reference Standard applying to all people in the State of Victoria, focused on plastics and microplastics more broadly.

30 *Environment Protection Act 2017*, s 25.

31 *Environment Protection Act 2017*, s 359 empowers the EPA to do all things that are necessary or convenient to be done for the performance of the EPA's functions and duties and to enable the EPA to achieve its objective (which is to protect human health and the environment by reducing the harmful effects of pollution and waste).

32 See: Environment Protection Authority Victoria, *General Standards Policy* (30 June 2021, Publication No. 1983); *Environment Protection Act 2017*, s 357.

3.1 EXISTING TOOLS TO ADDRESS PLASTIC FEEDSTOCK POLLUTION FROM PLASTIC INDUSTRY OPERATORS

3.1.1 Permissions: permits and registrations

Chapter 4 of the *Environment Protection Act 2017* sets out the permissions scheme, which prohibits persons from engaging in specified activities without the appropriate permission.

The EPA may issue a permission subject to conditions, including conditions specifying measures the permission holder must take to comply with the GED when engaging in the permission activity, and conditions relating to pollution incident planning, reporting or responses.[33] Permission conditions set minimum performance requirements, restrict certain actions or activities, or specify environmental outcomes for an activity to meet.[34]

In some circumstances – including where the combined impact of multiple activities results in risks of a cumulative nature – the EPA may also raise the performance standards beyond the level of the GED by specifically requiring the use of best available techniques and technology.[35]

There are three broad tiers of permission: licences, permits and registrations. The most appropriate permissions for regulating the loss of plastic feedstock, including plastic resin pellets, from plastic industry operators are:

a. **Permits** which apply to activities that are of moderate risk or high risk with low complexity and are not adequately addressed through the GED alone.

   Application for permits are subject to a standardised assessment process by EPA, and an approved permit will contain conditions that are largely standard across an industry sector.[36]

b. **Registrations** which are suited to activities that pose moderate to low risks and in instances where applying standard controls across a sector may raise the standard of compliance and minimise risks to human health and the environment (including as a precautionary approach to the management of emerging risks).

   By registering to perform an activity, and accepting any conditions attached to the registration, the duty holder agrees to meet the minimum requirements for undertaking that activity, including implementing any applicable practices or controls.[37]

The EPA does not currently use the permissions scheme to regulate plastic feedstock pollution from plastic industry operators.

3.1.1.1 Using permissions to regulate the activities of plastic industry operators

Whether the activities of particular plastic industry operators are best regulated through permits or registrations is a question of fact and opinion, which may require properly characterising:

a. The relevant 'activity'

   Namely, plastic industry operators who process a certain quantity of plastic feedstock, including plastic resin pellets, per year.

b. The level of complexity (of the activity)

   Insofar as the risk of harm is associated with poor handling and storage practices at or near plastic

33 EP Act 2017, s 54(2)(a) and s 54(2)(i).
34 EPA, *General Standards Policy* (30 June 2021, Publication No. 1983) 9.
35 EPA, *Permissions Scheme Policy* (23 June 2021, Publication No. 1799.2) 12.
36 EP Act 2017, s 81; EPA, *Permissions Scheme Policy* (23 June 2021, Publication 1799.2) 9.
37 EP Act 2017, s 85; Ibid.

industry operators, the activity may be characterised as of 'low complexity'.

c. The level of risk (noting that the higher the risk of harm, the higher the level of oversight and control required)

   In circumstances where:

   i. there is a demonstrable risk of harm to the environment from the plastic feedstock (and specifically plastic resin pellets) entering freshwater and marine environments where they may be ingested by aquatic animals, with subsequent health impacts (see Part 2.1 above); and

   ii. the risk of harm includes a risk of cumulative harm, taking account of harm arising from other sites, facilities, operators or locations *and* the harm arising from earlier pollution incidents (given the durability and persistence of plastic feedstock in the environment)

   the level of risk may be characterised as high.

3.1.1.2 Process for change

Permission activities are prescribed in Schedule 1 of the *Environment Protection Regulations 2021* (the **Regulations**).[38] For the permissions scheme to apply to plastic industry operators, the Regulations will need to be updated.[39]

Regulations are usually reviewed every 10 years, but they may also be amended at any time as required. Any amendment would be subject to public consultation and require the preparation of Regulatory Impact Statement (**RIS**) (unless granted an exemption).

As an alternative to amending the Regulations, the EP Act 2017 contains an exception for the third tier of permissions (Registrations). Section 87 enables the registration of non-prescribed activities (i.e. activities that are not identified in the Regulations) for a period of not more than 3 years, as if it were an activity prescribed to be subject to registration under section 85.

3.1.1.3 Reform proposal

It is evident the GED alone is proving insufficient to eliminate or reduce the risk of harm to the environment arising from the storage, use and handling of plastic feedstock, including plastic resin pellets, by plastic industry operators. In these circumstances:

Recommendation 1

The EPA should use the permissions scheme to regulate plastic feedstock pollution from plastic industry operators.

A. Within three months, the EPA should exercise its powers under section 87 of the EP Act 2017 to enable the registration of the activities of plastic industry operators.

B. As soon as possible thereafter, but no later than 1 July 2025, the EPA should seek to amend Schedule 1 of the Regulations to include the activities of plastic industry operators.

38 *Environment Protection Regulations 2021*, r 16 and Schedule 1, Cl. 10.1.
39 *Environment Protection Act 2017*, s 465 and Schedule 1.

3.1.2 Position statements

Chapter 5, Part 5.4, of the *Environment Protection Act 2017* enables the EPA to make position statements.

A position statement may state:[40]

a. the EPA's opinion on how a provision of the EP Act 2017 or the regulations would apply to a class of persons or to a set of circumstances; or

b. how the EPA would exercise a discretion under a provision of the EP Act 2017 or the regulations.

According to EPA policy, position statements are to be used in circumstances where the EPA's position is clear and relatively stable to help duty holders to understand the EPA's view and how they can expect the EPA to act in relation to the issues a position statement covers.[41]

3.1.2.1 Using a position statement to clarify the state of knowledge

The **state of knowledge** is the body of accepted knowledge that is known or ought to be reasonably known about risks of harm to the environment and the controls for eliminating or reducing those risks. It is a critical concept in determining whether a duty holder is compliant with the GED.[42]

The state of knowledge would be enhanced by the EPA publishing a position statement which clearly sets out information that plastic industry operators ought reasonably to know to comply with the GED.

The state of knowledge with respect to controls (i.e. the ways for eliminating or reducing the risks of harm from plastic feedstock, including plastic resin pellets, entering freshwater and marine environments) is relatively well established (see Part 2.2 above). It is potentially not clear whether duty holders know the risks of harm to the environment arising from their activities, particularly the *cumulative* risk of harm to which their own activities contribute or may contribute. In our view, however, duty holders have constructive knowledge of this fact: it is a fact they 'ought reasonably to know'.[43]

A position statement could, for example, incorporate the contents of the EPA's existing factsheet on plastic feedstock with the *Operation Clean Sweep* program, and do so in the form of a statutory instrument.

The position statement should be more specific than the factsheet, addressing the nature, scale and magnitude of risks of harm arising from plastic feedstock pollution, including plastic resin pellets. It should also expressly address the *cumulative* risk of harm (which is not currently addressed in the EPA's factsheet on managing plastic feedstock).

Notwithstanding that position statements do not give rise to any legal rights, expectations, duties or obligations that would not otherwise be conferred or imposed on a person,[44] a position statement is preferable to the publication of a factsheet (or guidance) because position statements are statutory instruments requiring public consultation, whereas guidelines are not. The Parliament created mechanisms (such as position statements) to be used for certain purposes and they should, in appropriate circumstances such as these, be so used.

40 *Environment Protection Act 2017*, s 107.
41 *General Standards Policy (30 June 2021*, Publication 1983) 8.
42 See: *Environment Protection Act 2017*, ss 25 and 6(2)(c).
43 *Environment Protection Act 2017*, s 6(2)(c).
44 *Environment Protection Act 2017*, s 109.

In circumstances where citizen scientists have gathered the 'first ever baseline dataset of microplastic pollution',[45] thereby documenting the risks of harm to the environment arising from the activities of plastic industry operators in Melbourne, it is particularly pertinent that members of the community are given a formal opportunity to engage in the EPA's process of distilling the state of knowledge into a statutory document.

3.1.2.2 Process for change

The EPA can make a position statement by publishing a notice of the position statement in the Government Gazette.[46]

Prior to doing so, the EPA must:[47]

a. prepare a draft position statement;

b. seek comment by holding a public consultation on the draft position statement; and

c. consider any comments received through the public consultation.

The process itself is likely to be educative for the plastic industry operators in Victoria.

3.1.2.3 Reform proposal

The GED alone is proving insufficient, and it is not clear whether duty holders understand or are responsive to the risks of harm to the environment arising from their activities. In these circumstances:

Recommendation 2

The EPA should exercise its power under section 105 of the EP Act 2017 to make a position statement which clearly sets out information plastic industry operators ought reasonably to know to comply with the GED, the EPA's views on application of the GED to this sector, and how the EPA intends or expects to exercise its powers in this context.

45 Commissioner for Environmental Sustainability Victoria, *Case Study: Clean Bay Blueprint – Microplastics in Melbourne* (8 December 2021) <https://www.ces.vic.gov.au/state-of-reports/state-marine-and-coastal-environment-2021-report/stories/clean-bay-blueprint>.
46 *Environment Protection Act 2017*, s 105.
47 *Environment Protection Act 2017*, s 108

3.2 EXISTING TOOLS TO ADDRESS PLASTIC POLLUTION MORE BROADLY

3.2.1 Environmental Reference Standard

Chapter 5, Part 5.2, of the EP Act 2017 enables the making of environmental reference standards.

The inaugural Environmental Reference Standard (**ERS**) commenced operation on 1 July 2021 and was amended on 29 March 2022. Its purpose is to support the protection of human health and the environment from pollution and waste by providing benchmarks to be used to assess and report on environmental conditions in the whole or any part of Victoria.[48] The ERS seeks to achieve this purpose by:

a. identifying **environmental values** to be achieved or maintained in the whole or any part of Victoria; and

b. specifying **indicators** and **objectives** to be used to measure, determine or assess whether those environmental values are being achieved, maintained or threatened.

3.2.1.1 Using the ERS to address plastic (and microplastic) pollution

Part 5 of the ERS lists the environmental values of water environments in Victoria and describes the environmental quality that is needed to achieve and maintain those values. It includes three key components:

a. **Segments:** areas or features of water environments that have common environmental conditions and natural characteristics (i.e. Port Phillip Bay).[49] Segments share common environmental values, indicators and objectives.

b. **Environmental values:** the values or uses of water environments that Victorians value and want to protect from pollution and waste (i.e. water that supports water-dependent ecosystems).

c. **Indicators** and **objectives:** physical, chemical and biological conditions that are characteristic of healthy water environments (i.e. turbidity, or level of toxicants). These conditions can be used to determine or assess whether environmental values are being achieved, maintained or threatened.

There is no express reference to plastics or microplastics pollution in Part 5 of the ERS, as distinct from the now discontinued State Environment Protection Policy (Waters), which specifically defined 'pollutant' to include 'plastics including microplastics'.[50] Plastics may fall within the indicators for toxicants in surface waters, but this inference or association is not clear.

The failure expressly to include plastics, including microplastics, in the ERS is, in our view and in light of the scale, context and ubiquity of risks and harms associated with plastics noted above, a significant if not extraordinary gap or oversight in a principal reference document.

48 Environment Reference Standard (No. S245 Gazette 26 May 2021, as amended by Environment Reference Standard No. S158 Gazette 29 March 2022) <https://www.epa.vic.gov.au/about-epa/laws/compliance-and-directions/environment-reference-standard> Cl 2.
49 Ibid, Cl 17 (1)(d)(i).
50 Victorian Government Gazette No. S 499 (Tuesday 23 October 2018), *State Environment Protection Policy (Waters) Cl 6.*

3.2.1.2 Process for change

The ERS can be amended from time to time by the Governor in Council, on the recommendation of the Minister.[51]

It is the role of EPA to ensure appropriate information is provided to the relevant Minister and Governor in Council to satisfy the requirements of the EP Act 2017.[52]

It is anticipated that the ERS will be amended in the coming year/s as the EPA published a 'Forward Plan' of priority areas for ERS review and amendment in August 2021.[53] The plan includes actions for the 'next 4–1 years' including:

a. prioritising contaminants for inclusion in the ERS and undertaking a review/development of the relevant standards.

b. reviewing and developing indicators and objectives to address priority emerging contaminants in water and the knowledge gaps described in Appendix E of the *SEPP (Waters) Monitoring, Evaluation and Reporting Framework.*[54]

It is not known whether the EPA considers plastics and or microplastics to fall within the actions above. In any event, the ERS should be amended to incorporate plastics (including microplastics) within the framework of indicators and objectives of water quality under Part 5, Division 3 of the ERS.

The *State of the Marine and Coastal Environment Report 2021* contains an indicator for 'litter and plastics', with the following measure:

> Number of litter items (including plastic and microplastic) in catchment waterways flowing into marine environments.[55]

An amendment to the ERS to account for plastic and microplastic pollution would be generally consistent with reporting by the Commissioner for Environmental Sustainability Victoria, albeit more detailed. For example, an amendment to the ERS to incorporate plastics (including microplastics) could include:

a. an **objective** of 'level of plastics/level of microplastics', which would be similar to the existing objective of 'level of toxicants', and

b. an **indicator** of '99% species protection' (noting that microplastics are bio-accumulative).

It is critical that plastics and microplastics pollution is recognised as a standalone and consequential pollution problem of considerable gravity which should not be conflated with 'litter', which is a far more abstract category.

The description of the environmental value of 'water dependent ecosystems and species' in Table 5.1 of the ERS should also be expanded to include 'integrity of water quality as it contributes to the health of aquatic fauna, including freedom from ingesting plastics and microplastics'. See, for example, table 5.1 below:

TABLE 5.1 : ENVIRONMENTAL VALUES OF WATERS (EXPANDED AS PER RECOMMENDATION 4)

Environmental value	Description of environmental value*
Water-dependent ecosystems and species	Water quality that is suitable to protect the integrity and biodiversity of water-dependent ecosystems. This integrity and biodiversity includes— • … • the integrity of water quality as it contributes to the health of aquatic fauna, including freedom from ingesting plastics and microplastics

51 Environment Protection Authority Victoria, *Review and Amendment of the Environment Reference Standard* (August 2021, (Publication No. 1971) 5-6; *Environment Protection Act 2017,* Part 5.2.
52 Ibid 6; *Environment Protection Act 2017,* s 358(e).
53 Ibid, 10.
54 Note: We understand the Chief Environmental Scientist, Victorian Environment Protection Authority, undertook an assessment of the scientific underpinnings of the first ERS and provided recommendations for future review and amendment. One of those recommendations relates to the knowledge gaps contained in Appendix E of the *SEPP (Waters) Monitoring, Evaluation and Reporting Framework.* We wrote to the Office of the Chief Scientist on 20 October 2023 and 13 March 2024 to request a copy of the *SEPP (Waters) Monitoring, Evaluation and Reporting Framework*, but received no response.
55 Commissioner for Environmental Sustainability Victoria, *State of the Marine and Coastal Environment 2021 Report: Parts 1 and 2* (2021) 143.

3.2.1.3 Reform proposal

In circumstances where the environmental impact from plastic pollution in the Yarra and Maribyrnong rivers and, ultimately Port Phillip Bay, is deteriorating, it is vital that the ERS be updated to enable the assessment and reporting on this type of pollution.

Recommendation 3

The EPA should advise, and the Minister should recommend, that the ERS be amended to incorporate plastics (including, microplastics) within the framework of indicators and objectives of water quality under Part 5, Division 3 of the ERS. The amendment should include:

a. an **objective** of 'level of plastics/level of microplastics'

b. an **indicator** of '99% species protection' (noting that microplastics are bio-accumulative).

Recommendation 4

The EPA should advise, and the Minister should recommend, that the ERS be amended to expand the description of the environmental value of 'water-dependent ecosystems and species' to include 'integrity of water quality as it contributes to the health of aquatic fauna, including freedom from ingesting plastics and microplastics'.

4 CONCLUSION

There is a strong moral case that humanity should not allow the ocean to become more polluted by plastic debris and microplastics.

United Nations Environment Programme

Since the first baseline dataset on microplastic pollution in the Yarra and Maribyrnong Rivers and Port Phillip Bay beaches was published in 2020, citizen scientists have continued to volunteer their time and energy to gather data on the sources and extent of plastic feedstock pollution.

Victoria's baseline dataset of microplastic pollution demonstrated that plastic pollution in our local waterways is worsening, and the most recent data (collected in 2024) confirms that plastic feedstock pollution continues to be a problem. The most recent data also indicates that Victoria's current regulatory approach is failing to prevent risks of harm to the environment from plastic feedstock, including plastic resin pellets.

In these circumstances, there is a compelling case for the EPA to use the full suite of tools available in the *Environment Protection Act 2017* to prevent harm to the environment from microplastic pollution, and to achieve its statutory objective, which is to protect human health and the environment by reducing the harmful effects of pollution and waste.[57] There is also a strategic case for the EPA to target plastic feedstock as a particular subset of plastic and microplastic pollution. In circumstances where there are now good sources of knowledge about the problem – including identifiable point sources – and the ways of eliminating or reducing the risks of harm, it is likely to be an efficient and effective use of the State's regulatory and institutional resources to address pollution and waste.

This report sets out measures that the EPA, as the State's regulator of pollution and waste, can and should adopt now to prevent plastics entering the freshwater and marine environment. On their own, none of the legal tools are a panacea to the issue of microplastic pollution. However, when used in combination, the adoption and use the tools proposed in this report is likely to make a tangible difference to protecting our freshwater and marine environment.

There are ever-increasing calls for action on microplastic pollution. The international community is currently developing a legally binding instrument on plastic pollution (including in the marine environment),[58] there are calls for a national microplastic reduction strategy to be in place by the end of 2025,[59] and it is high time for Victoria's environmental protection laws to be deployed to address microplastics pollution locally.

56 United Nations Environment Programme, *Marine Plastic Debris & Microplastics: Global lessons and research to inspire action and guide policy change* (2016) 181.
57 *Environment Protection Act 2017, s 357.*
58 See: <https://www.unep.org/inc-plastic-pollution>.
59 See: Parliament of Australia, House of Representatives' Standing Committee on Climate Change, Energy, Environment and Water, *Inquiry into Plastic Pollution in Australia's Oceans and Waterways* (May 2024) Recommendation 15 <https://www.aph.gov.au/Parliamentary_Business/Committees/House/Climate_Change_Energy_Environment_and_Water/Plasticpollution/Report>.

5 RECOMMENDATIONS

Recommendation 1

The EPA should use the permissions scheme to regulate plastic feedstock pollution from plastic industry operators.

A. Within three months, the EPA should exercise its powers under section 87 of the EP Act 2017 to enable the registration of the activities of plastic industry operators.

B. As soon as possible thereafter, but no later than 1 July 2025, the EPA should seek to amend Schedule 1 of the Regulations to include the activities of plastic industry operators.

Recommendation 2

The EPA should exercise its power under section 105 of the EP Act 2017 to make a position statement which clearly sets out information plastic industry operators ought reasonably to know to comply with the GED, the EPA's views on application of the GED to this sector, and how the EPA intends or expects to exercise its powers in this context.

Recommendation 3

The EPA should advise, and the Minister should recommend, that the ERS be amended to incorporate plastics (including, microplastics) within the framework of indicators and objectives of water quality under Part 5, Division 3 of the ERS. The amendment should include:

a. an **objective** of 'level of plastics/level of microplastics'

b. an **indicator** of '99% species protection' (noting that microplastics are bio-accumulative).

Recommendation 4

The EPA should advise, and the Minister should recommend, that the ERS be amended to expand the description of the environmental value of 'water-dependent ecosystems and species' to include 'integrity of water quality as it contributes to the health of aquatic fauna, including freedom from ingesting plastics and microplastics'.