New South Wales Government
Independent Planning Commission

DR SOPHIE SCAMPS	**OBJECT**	Submission ID: e35
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Attachment: *Attached overleaf*		

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Dear Independent Planning Commission,

Attached is a submission to the above inquiry from Dr Sophie Scamps, independent member for the Federal seat of Mackellar.

Kind regards,

Independent Planning Commission
Level 15, 135 King Street
Sydney NSW 2000

Moss Vale Plastics Recycling Facility
SSD-9409987

Dear Commissioners

I am writing to express my strong opposition to application SSD-9409987.

The development represents a threat to residents of both the Southern Highlands and Sydney. My key concerns relate to health and environmental risks arising from microplastic pollution and potential fire.

Microplastics and nanoplastics

Plastics comprise thousands of different chemicals – more than 13,000 according to the United Nations – with more than 3200 of them known to be hazardous to human health.[1]

Microplastics are typically defined as fragments of any type of plastic less than 5 mm in length.[2] Nanoplastics are a type of microplastic even smaller in size, usually between 1 and 1000 nanometers.

Plastics recycling as a source of microplastic pollution

It is clear from the science that plastic recycling contributes significant quantities of microplastics to the surrounding environment, even when best practice mitigation measures are adopted.[3] It is during the flaking or shredding phase of mechanical recycling in particular, that microplastics are generated.[4]

In the case of a UK plastics recycling plant that scientists assessed last year, the microplastics released into wastewater amounted to 13 per cent of the total plastic processed.[5] Introducing a filtration system was unable to stop this pollution, it only reduced the figure to 6 per cent. Of note, the study found that microplastics <5µm were generally not removed by the filtration system. There were also high levels of microplastics in the surrounding air.

This state-of-the-art facility was described as a best case scenario, with the researchers noting that other recycling facilities may be far worse polluters.[6] Other studies, including in Australia, China, South Korea, Vietnam and Norway, have similarly found that plastics recycling facilities are a significant source of microplastics pollution.[7]

PlasRefine development: microplastic pollution

The applicant (PlasRefine) has stated that its wastewater microplastic emissions will amount to 400g/day. This appears to be a significant underestimation. Of note, the applicant has not provided any detail or reference for its post-treatment microplastic estimate of 40mg/L. Its estimates are inconsistent with the studies noted above.

Furthermore, the applicant's estimates do not take into account nanoplastics which, due to their tiny size, do not fall within the definition of "suspended solids". However, once released into the environment, it is these nanoplastics that can be most challenging, if not impossible, to remove and that are most harmful to human health.[8]

I note that the Wingecarribee Local Council objects to the PlasRefine development and states that the Moss Vale Sewage Treatment Plant has no specific element capable of removing microplastics.[9] The Council states that the development "will inevitably result in a subsequent

increase in microplastics making their way into the environment in treated effluent which is wholly within the Sydney Water Drinking Catchment".[10]

Additionally, the PlasRefine development will be a source of airborne microplastics and other toxic air pollution. One recent study found that during the plastic recycling process, respirable airborne microplastics can exceed 1 million particles per cubic centimetre, making recycling facilities a potentially dangerous environment for workers and visitors.[11] I note that the site will be continuously operating even when its large roller doors are open for truck movements.[12]

Scientific studies suggest that airborne microplastics can travel long distances from their source via atmospheric transport.[13] Furthermore, airborne microplastics deposited on land can be washed into waterways via stormwater and surface runoff.[14]

Microplastics originating from the PlasRefine site are more than a local issue. Their passage into local waterways, which feed into Sydney's drinking catchment, make them relevant to many millions of Australians.

Fire risk

Even if the applicant was able to effectively contain microplastic pollution from the site (which the research suggests is impossible), it cannot prevent the catastrophic plastic pollution that would result from a fire.

Consent conditions allow Plasrefine to process up to 120,000 tonnes per annum of mixed plastic matter and store up to 20,000 tonnes of unprocessed mixed plastic waste on the site at any one time. This would typically include mixed plastic waste, comprising polyethylene terephthalate (PET bottles), high density polyethylene (HDPE bottles), polypropylene (PP bottles), acrylonitrile butadiene styrene (ABS), unplasticised polyvinyl chloride pipes (UPVC) and low-density polyethylene films. In addition, there will be an undisclosed volume of processed plastic product and an undisclosed quantity of unidentified chemicals used in processing stored at the proposed site.

No amount of filtration and other mitigation measures could prevent the highly toxic substances stored in the site from entering the surrounding air and waterways in the case of fire.

In its recent lawsuit against ExxonMobil, the State of California has noted that "significant health harms to communities can result from fires fuelled by plastic waste".[15] In Greece, a fire in a plastic recycling plant resulted in an increase in polychlorinated dioxins and dibenzofurans (PCDD/Fs) levels in the surrounding air, which was associated with a 13 per cent increase in 30-year cancer risk, and even higher lifetime cancer risk, in newborns exposed in utero or via breastmilk.[16]

Fires are not uncommon in plastics recycling facilities due to the high flammability of plastic products.[17] Once lit, plastics recycling plant fires are extremely challenging to put out and can burn for days, causing catastrophic pollution which will ultimately impact Sydney's drinking water due to the site's location.[18]

Microplastics and PFAS

Microplastics often go hand-in-hand with per- and polyfluoroalkyl substances (PFAS). PFAS have grease and water-resistant properties and are added to many plastic consumer products.[19] Furthermore, it is now well established that PFAS and other contaminants readily adhere to microplastic particles.[20] Microplastics serve as vectors for PFAS to undergo long-range transport in water and air.[21] Plastics and PFAS both resist degradation and are both regarded as "forever" contaminants, with both comprising chemicals classed as persistent organic pollutants.[22]

On 21 October 2024, the National Health and Medical Research Centre (NHMRC) released proposed guidelines which outline new, lower recommended values of PFAS in drinking water.[23] This is an emerging issue and regulation has not yet kept up with the science. Microplastics in drinking water present their own unique health problems (see below) but, additionally, microplastics have the potential to increase the PFAS content of drinking water.

Microplastics and human health

Microplastics are bioaccumulative. They have been found to accumulate in every organ in the human body, including the lungs, liver, bone marrow, reproductive systems and brain.[24] They have even been found in placenta and breastmilk.[25]

The research is still emerging, but links are being found between microplastic exposure and a wide range of health problems including dementia, cancer, asthma, lung disease, liver disease and infertility.[26] The following extract from *The Minderoo-Monaco Commission on Plastics and Human Health* is illuminative:

> "Plastic production workers are at increased risk of leukemia, lymphoma, hepatic angiosarcoma, brain cancer, breast cancer, mesothelioma, neurotoxic injury, and decreased fertility. … Plastic recycling workers have increased rates of cardiovascular disease, toxic metal poisoning, neuropathy, and lung cancer. Residents of 'fenceline' communities adjacent to plastic production and waste disposal sites experience increased risks of premature birth, low birth weight, asthma, childhood leukemia, cardiovascular disease, chronic obstructive pulmonary disease, and lung cancer."

Health risks arise not just from the microplastics themselves but also from the additional chemicals they act as vectors for, such as BPA and PFAS. These substances accumulate alongside microplastics in the body increasing cancer risk and causing damage to hormones, thyroid function, cognition and fertility.[27]

Microplastics can also act as a vectors for microorganisms, including human pathogens containing antibiotic-resistance genes.[28] Pathogenic bacteria such as *E. coli* have been found on plastic pellets on beaches.[29] A recent human study showed that the presence of pathological microbes in lung fluid was associated with higher microplastic concentrations. In short, microplastics can play a role in facilitating the emergence of infectious diseases.[30] Additionally, antibiotics and synthetic hormones readily adhere to microplastics.[31]

Current regulation

Although microplastics are emerging as a serious environmental and health threat, the science is still so new that Government regulation has not yet kept up. To date, no legislation or standards appear to exist within Australia to control the release into the environment of microplastics specifically. Similarly, Australian drinking water guidelines do not address microplastics specifically. Of note, the US and Europe have both made progress to address microplastics in drinking water.[32]

Until recently, there have not even been standard methodologies in Australia for analysing microplastics.[33]

There is an urgent need for regulation to address the emerging environmental and health threats posed by microplastic pollution before serious, irreversible damage is done. In the absence of such regulation, the precautionary principle must be applied when determining developments, such as this, that may be a significant source of microplastic pollution.

Precautionary principle

The precautionary principle is triggered where there is a threat of serious or irreversible environmental damage and there is a lack of full scientific certainty as to the environmental damage.

Clearly, in this case the threat of environmental damage is both serious and irreversible.

The Social Impact Assessment prepared by Ethos Urban (19 September 2023) assessed "the potential for water contamination impacts to affect human health as the site is within the Sydney drinking water catchment area". It found that, for this potential impact:

- the duration period was **permanent**; and
- the magnitude was **major**.

However, it went on to find that the residual impact rating was low, dependent on final details of treatment processes. Respectfully, I disagree that the mitigations proposed by the Applicant render this threat low.

As set out above, there is strong evidence of plastics recycling as a major source of microplastics pollution, even where best-practice mitigation measures are utilised. However, this remains a new area of scientific study. As UK researchers have noted: "The release of microplastic pollution in wash water discharge from plastic recycling facilities is significantly understudied and there is a research and knowledge gap in understanding how plastic recycling facilities may contribute to the environmental plastic pollution problem."[34] All of the key studies date only as far back as 2022.

The knowledge gap in plastics and microplastics is further evidenced by the NSW Government's Plastics Research Program, which is currently offering grants totalling $1.25 million for projects that "investigate and identify potentially harmful chemicals in plastic products ... and boost the capacity to measure microplastics in the environment".

As such, it is appropriate that the precautionary principle be applied so that the scale of the potential environmental pollution can be fully quantified and understood.

The NSW EPA have recognised the importance of a precautionary approach when it comes to microplastics: "To ensure we can ... protect our waterways, plants, animals and communities, we need to take a precautionary approach. This means ... we need to ensure plastic items are properly managed and disposed of to limit the release of chemicals and microplastics into the environment."[35]

Site suitability

This is clearly not the right site for a development of this nature and scale. In light of the significant risks arising from microplastic and other toxic pollution, especially in the case of fire, plastics recycling and reprocessing facilities need to be judiciously located in appropriate industrial precincts with adequate buffers from residents, schools and drinking catchments.

In this case, the nearest resident is less than 200m from the site, the nearest early childhood centre is 750m and the site is located in a flood-impacted area adjacent to a riparian corridor that runs into Sydney's drinking catchment.

For the reasons outlined above, I believe that the Commission should refuse the application as proposed. No amount of mitigation measures can resolve the fundamental flaw presented by the lack of site suitability. This is quite simply not the right site.

Yours faithfully

Dr Sophie Scamps MP

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