



LINDSAY TUGGLE SLOAN

OBJECT

Submission ID: 214778

Organisation: <i>N/A</i>	Key issues: <i>Social impacts</i>
Location: <i>New South Wales 2576</i>	
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Please see attached document

Dear Members of the IPC,

Thank you for taking the time to visit our community, listen to our objections and read our submissions. I remain deeply grateful to the IPC for protecting the Highlands from Hume Coal, and hope for the same outcome in relation to a State Significant Development (SSD-9409987) for the Moss Vale Plastic Recycling Facility (hereafter referred to as Plasrefine).

I believe in the importance of recycling as we transition to a circular green economy. However, as over 1,000 written (and counting) and 132 public-hearing speakers have articulated, this is simply not the right site.

This development has been rejected twice by two different Wingecarribee Shire Councils (WSC). The Administrative WSC formally rejected the Plasrefine proposal in November 2023. Our newly elected councillors campaigned on their track record of opposition, which was a catalytic factor in their election. One of the new council's first actions was to formally and unanimously "reiterate its strong opposition to the proposed State Significant Development (SSD-9409987) for the Moss Vale Plastic Recycling Facility."¹

All MPs at federal and state levels have lodged public objections to this proposal. Strikingly, our MPS are unified on this issue despite their political differences: Liberal MP Wendy Tuckerman (State MP, Goulburn), Labour MP Stephen Jones (Federal MP, Whitlam), and Independent Judy Hannan (State MP for Wollondilly, the adjacent electorate that includes Bowral, which will be directly affected by air and water pollutants and economic impacts). MP Wendy Tuckerman even offered to help find the proponent an appropriate site.²

Despite unanimous and vehement opposition, all three tiers of elected government were overruled, and the community's right to self-determination ignored by the ████████ NSW Government.³

If Plasrefine is approved despite overwhelming opposition, this community's faith in government will be irreparably damaged for generations to come. This risk is particularly acute in the current geopolitical climate, where faith in democracy is imperilled across the world.

WSC has expressed "outrage, disgust and devastation" at the State Government's overruling of their decision to reject Plasrefine.⁴ Elected officials and industry experts like Grant Figtree

¹ <https://www.wsc.nsw.gov.au/files/assets/public/v/1/plan-and-build/community-interest-items/wsc-submission-to-ipc-re-plasrefine.pdf>

² MP Wendy Tuckerman speech to Moss Vale Matters 23 October 2024.
<https://www.youtube.com/watch?v=dXwJTCf37IE>

³ According to The UN the right to self-determination involves 'the rights of all peoples to pursue freely their economic, social and cultural development without outside interference.'

<https://www.ag.gov.au/rights-and-protections/human-rights-and-anti-discrimination/human-rights-scrutiny/public-sector-guidance-sheets/right-self-determination#:~:text=The%20UN%20Committee%20on%20the,the%20whole%20population%20without%20distinction>

⁴ Mayor Jesse Fitzpatrick, Statement to IPC, Day 1.

(who has advised the World Bank and the Australian Government) are shocked at the approval of a vague “plan” to mitigate high-impact risks to public health, epitomized in the proponent’s claim that “people living near the site would be able to manage their exposure to air quality impacts through minimising time outdoors.”⁵ It strains credulity that a plan so indifferent to the quality of life of NSW residents was approved by the NSW State Government.

Economic Impacts

Our vibrant rural community benefits from local, symbiotic economies that centre around our picturesque environment, heritage architecture and exceptional produce.

We have become one of the top wedding, wine and culinary destinations in NSW.⁶ Local winemakers have raised concerns about the facility's impact on more than 50 vineyards, including 1,500 pinot noir vines that are 200 metres from the proposed site.⁷ Each of the townships in the highlands depends on tourism and the booming wedding market.

These interconnected markets contribute to a flourishing rural community. For example, wedding guests usually stay for an entire weekend or longer. They eat in our restaurants and cafes, visit our farmers markets and wineries, stay in our architecturally renowned bnbs⁸ and hotels,⁹ walk in our national parks and swim in our creeks and rivers. The livelihood of the Southern Highlands depends on these symbiotic markets, all of which would be devastated by Plasrefine. As local winemaker Michael Kean said to the ABC, "The mere presence of a large-scale plastics waste recycling facility will change the perception of our region."¹⁰

Moss Vale’s economic renaissance is the especially evident on the south end of Argyle street, barely 2km from this development. Once pockmarked with vacant shops, South Argyle now features not one but two Suzy Anderson homewares stores, a new wine bar, the excellent Highlands Merchant cafe and several boutiques featuring furniture, textiles and fashion by local artisans. Most recently, renowned interior and fabric designer Tigger Hall opened a showroom at 467 Argyle Street.

⁵ GDH submission p. 10 Appendix J.

⁶ <https://www.visitnsw.com/destinations/country-nsw/southern-highlands/food-and-drink>

⁷ https://www.abc.net.au/news/2024-11-13/southern-highlands-residents-plea-stop-plastic-recycling-plant/104591790?utm_source=abc_news_web&utm_medium=content_shared&utm_campaign=abc_news_web&utm_content=link

⁸ <https://www.theurbanlist.com/sydney/a-list/sydney-common-sheraton-resturaunt>

⁹ <https://miltonpark.com.au>
<https://osbornhouse.com.au>
<https://beridahotel.com.au>

The above are but a few of the premier hotels in our area. There are many more.

¹⁰ https://www.abc.net.au/news/2024-11-13/southern-highlands-residents-plea-stop-plastic-recycling-plant/104591790?utm_source=abc_news_web&utm_medium=content_shared&utm_campaign=abc_news_web&utm_content=link

The community is very excited about the current redevelopment of the heritage Central Hotel into the Argyle Street Stables, a constellation of businesses including a boutique wellness studio, beer garden and ice creamery.¹¹ Work is already in progress. But who will want to sit in the “world’s best beer garden” if it is covered in microplastic dust (fine airborne particulate matter)?¹² Will the wellness cohort really want to take ice baths and infrared saunas less than 2km away from a plastic refinery?

The personal story of how I came to live here demonstrates the longitudinal impacts of tourism and the wedding industry on our local economy. I first fell in love with the Highlands 17 years ago, when I came for a writing retreat in the final stages of my doctoral dissertation. When my partner and I were looking for a place to host our wedding, we chose Bowral. We rented the Carriage House at Milton Park and our guests joined us for a Highlands long weekend. That weekend cemented our decision to move to the highlands as soon as we could detach professionally from Sydney. However, we were distressed by the ongoing threat of Hume Coal. We decided not to purchase until the “Battle for Berrima” was resolved.

In the meantime, we began researching our tree change to determine which of the picturesque Highlands villages was the best fit for us. At every opportunity we headed south. We stayed in Robertson, Bowral, Berrima, Bundanoon, Moss Vale and all points in between. In 2020, we rented a house in Bundanoon for a year while the owners were overseas. In 2021, we rented a 130-acre property in Canyonleigh complete with livestock. While living in both Bundanoon and Canyonleigh, Moss Vale was our nearest town for grocery shopping, errands and other amenities. We became aware of the fight against Plasrefine, and determined that we would not purchase in the Highlands unless the development was rejected. Once the administrative council rejected the proposal in Nov. 2023, we proceeded with our property plans. In January of 2024, we purchased a home on [REDACTED] Bowral, overlooking Mt Gibraltar.

After delaying our home purchase until both Hume Coal and Plasrefine were rejected, you can imagine our despair and anxiety at having our new home threatened by proximity to one of the nation’s largest plastic refineries less than a year after we settled. When we learned that the State government had overruled our elected officials to approve Plasrefine, we were

¹¹ <https://www.facebook.com/beer.central.2023>

¹² “MNPs have been found in a form bound to fine, inhalable particulate matter with an aerodynamic diameter of 2.5 µm or less (PM_{2.5}) and transported long distances by wind.”

Raffaele Marfella, Francesco Prattichizzo, Celestino Sardu, Gianluca Fulgenzi, Laura Graciotti, Tatiana Spadoni, Nunzia D’Onofrio, and Giuseppe Paolisso, “Microplastics and Nanoplastics in Atherosclerosis and Cardiovascular Events,” Published March 6, 2024
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MP “dust particulates stay in the air for a prolonged period compared to natural dust aggregates of the same size, which facilitate their transport to distant locations.”

Srinidhi Sridharan, Manish Kumar, Lal Singh, Nanthi S. Bolan, Mahua Saha, “Microplastics as an emerging source of particulate air pollution: A critical review,” [Journal of Hazardous Materials Volume 418](#), 15 September 2021.

in the design stage of a major (\$500k) renovation which is scheduled to commence in February, using a local builder and local trades. However, we are now rethinking the scope, as we are worried about our property values declining substantively in the unthinkable circumstance that Plasrefine is approved. On the subject of the devastating effects Plasrefine is already having on property values, I refer you to the oral presentation of local real estate agent Ben Olofsen, partner at The Agency in Moss Vale, and Property Economist and Architect Alex Sicari, both of whom spoke on the second day of public hearings.

In the arc of my own small life, you can clearly see how weekender tourism and our decision to marry in Bowral impacted the local economy: leading us to visit many times over several years, to rent and purchase a home and commit to a \$500k renovation—which we will be forced to scale back or abandon entirely if this large-scale, high-impact, high-risk plastic refinery is allowed to risk our health and decrease our property value.

Unsuitable Location: Proximity to residential homes, schools, water sources

Plasrefine proposes to build one of the nation's largest plastics refineries with, paradoxically, the *narrowest buffer zone between residences and water sources*.

At barely 2km from Moss Vale town centre, this site is far too close to residential areas (within approx. 200 metres to existing residences and 90m to new lots already approved for sale and development). Several schools and childcare centres are located within an approx. 2 km radius. How will these schools comply with the proponent's directive to "minimise time outdoors"?

Despite the extremely close proximity to homes, schools, farms and a medical research facility, "Plasrefine plans to operate 24 hours a day, 7 days a week as it processes up to 120,000 tons of plastic waste per annum."¹³ How is this permissible in a residential area barely 2km from a township that depends on tourism.

Noise from the facility, with trucks arriving and departing (especially beeping while reversing) and other industrial noise, smoke and odours from the refinery will adversely affect the physical and mental health of nearby residents and have a detrimental impact on student learning at nearby schools. While the noise will disrupt their classroom learning, students also need exercise and time outdoors to maximise their learning and keep physically fit. Yet the proponent directs humans in proximity to "stay indoors" to protect themselves from "air quality impacts."

The facility is also perilously close to riparian zones with only 10m approx. on either side of the building to streams that feed into the Wingecarribee River that supplies drinking water to Sydney and Goulburn.

In contrast, the plastic recycling refinery in Parkes NSW *has a buffer zone of at least 7km*. The Parkes site also has nearby access to appropriate waste infrastructure, interstate railways and a strategic intersection. Plasrefine, by comparison, is not near the highway and would put heavy trucks on already beleaguered rural roads that are woefully inadequate to their current purposes.

¹³ *Southern Highlands Express*, Issue 225, 13 November 2024.

Applying conditions to limit the times of operation or truck movements is not sufficient (see the sections below on risks to human health, fire risks, water and air pollution). In keeping with similar facilities elsewhere, there should be an adequate protective buffer zone between such a high-risk, high impact refinery and surrounding homes. A safe buffer zone cannot be achieved in this location, especially in such close proximity to creeks that flow directly into Sydney's water catchment.

The Garvan Institute (Australian BioResources facility) is only 50m away. The ABR is a world class state-of-the art facility for breeding and holding mice critical for medical research into the fields of cancer, mental illness, arthritis, asthma, heart disease, diabetes, obesity and genetic conditions). Noise and vibration may disrupt the breeding cycle of the research mice.

The ABR is precisely the type of industry the SHIP was designed to attract. As WSC has submitted, Plasrefine "undermines Council's State-funded strategic framework, for the Southern Highlands Innovation Park (SHIP) to foster an emerging biotechnology sub-precinct... and Compromises and sterilises land for future employment-generating land uses across the broader Southern Highlands Innovation Park (SHIP) with excessive truck movements across the entire precinct, from the highway traversing available heavy industrial lands, available general industrial lands and navigating 3 level rail crossings to reach a well-established residential interface."¹⁴

Much like the symbiotic markets discussed earlier, the villages of the Southern Highlands are interwoven. We do not think of ourselves as residents of Bowral, Moss Vale or Canyonleigh. We are Highlanders. On any given week, my life takes me to Moss Vale, Mittagong and Bowral for a variety of reasons. Likewise, tourists do not come to the Highlands and see only the village they are staying in. The proximity of so many heritage townships, national parks and rivers, galleries, wineries and destination restaurants throughout our charming villages and surrounds attracts them. Across the Highlands, our lives and livelihoods are entwined. As the IPC will no doubt recall from the "Battle for Berrima," what affects one Highlands village affects us all.

Risks to Human Health

"Several studies have shown that microplastics and nanoplastics (MNPs) enter the human body through ingestion, inhalation, and skin exposure, where they interact with tissues and organs. MNPs have been found in selected human tissues, such as the placenta, lungs, and liver, as well as in breast milk, urine, and blood. Recent studies performed in preclinical models have led to the suggestion of MNPs as a new risk factor for cardiovascular diseases. Data from in vitro studies suggest that specific MNPs promote oxidative stress, inflammation, and apoptosis in endothelial and other vascular cells; animal models support a role for MNPs in altered heart rate, cardiac-function impairment, myocardial fibrosis, and endothelial dysfunction."¹⁵

¹⁴ <https://www.wsc.nsw.gov.au/files/assets/public/v/1/plan-and-build/community-interest-items/wsc-submission-to-ipc-re-plasrefine.pdf>

¹⁵Raffaele Marfella, Francesco Prattichizzo, Celestino Sardu, Gianluca Fulgenzi, Laura Graciotti, Tatiana Spadoni, Nunzia D'Onofrio, and Giuseppe Paolisso, "Microplastics and Nanoplastics in Atheromas and Cardiovascular Events," Published March 6, 2024
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In the interests of brevity, I will limit my focus to the medical conditions that directly impact my family. On the broader health risks posed by MNPs I refer you to the submissions of local medical professionals: Dr Helen McKool, (GP, former Director of Medicine for the Royal Australian Navy), Dr Jacqueline Duc (Local Doctors of Southern Highlands), Jane Etchell RN, Pip Reed (Advanced Diploma in Nutritional Medicine).

I live with four chronic health conditions that may be adversely impacted by exposure to MNPs: the autoimmune disease Hashimoto's thyroiditis, endometriosis, adenomyosis and polycystic ovarian syndrome.

My husband has severe cardiovascular disease and prostatic hyperplasia. We are currently seeking advice from my endocrinologist and his cardiologist as to whether we can safely remain in our home should Plasrefine be approved.

A) Thyroid Risks

In the study "Thyroid and parathyroid function disorders induced by short-term exposure of microplastics and nanoplastics: Exploration of toxic mechanisms and early warning biomarkers," Zhang et al. found: "Results showed that MNPs induced endocrine disruptions in short-term exposure by both dietary and respiratory pathways. Nanoplastics (NPs) exhibited the highest level of toxicity to parathyroid gland through respiration."¹⁶

B) Endocrine Disruptors (EDs are adversely correlated with all four of my chronic conditions: Hashimoto's thyroiditis, endometriosis, adenomyosis and PCOS)

The Endocrine Society is a global community of physicians and scientists dedicated to accelerating scientific breakthroughs and improving patient health. Their "expert overview of twenty years of research shows that plastics pose a threat to public health because they contain a host of hazardous, endocrine-disrupting chemicals (EDCs) that leach and contaminate humans and the environment. As plastic production increases, rates of acute and chronic diseases and deaths resulting from exposure to endocrine-disrupting chemicals in plastics are anticipated to rise. Based on the scientific evidence, governments and companies should enact policies that minimize exposure to EDCs to protect public health and the environment."¹⁷

Microplastics are linked to elevated risks of developing endometriosis and other inflammatory conditions in the reproductive system including adenomyosis and PCOS. Furthermore, they may exacerbate symptoms for existing sufferers, making conditions like endometriosis more severe and harder to treat.

In "Pollution and endometriosis: A deep dive into the environmental impacts on women's health," Alexandre Vallée et al. observe: "Endocrine-disrupting chemicals (EDCs) in

¹⁶ Zhang J, Liu L, Dai X, Li B, Zhang S, Yu Y. Thyroid and parathyroid function disorders induced by short-term exposure of microplastics and nanoplastics: Exploration of toxic mechanisms and early warning biomarkers. *J Hazard Mater.* 2024 Sep 5. <https://pubmed.ncbi.nlm.nih.gov/38901250/>

¹⁷ "Plastics, EDCs & Health: Authoritative Guide" <https://www.endocrine.org/topics/edc/plastics-edcs-and-health>

pollutants dysregulate the hormonal balance, contributing to the progression of this major gynaecological disorder. Air pollution, specifically PM2.5 and PAHs, has been associated with an increased risk of endometriosis by enhancing chronic inflammation, oxidative stress, and hormonal imbalances. Public health policies have a major role in addressing the interaction between pollution and endometriosis in a long-term commitment.”¹⁸

I can say from lived experience that endometriosis is an extremely painful, debilitating condition that affects every facet of a woman’s life. The Australian Institute for Health and Welfare has identified endometriosis as an economic burden.¹⁹

C) Prostate Cancer Risks

In “Identification and analysis of microplastics in para-tumor and tumor of human prostate,” published in *eBioMedicine*, which is part of *The Lancet*, Deng, Chenyao et al. explain:

“Prostate cancer is one of the most common cancers among men worldwide. Its incidence increases with age and it encompasses several risk factors such as genetics, hormones, lifestyle and environmental pollution.^{15,16} Change in level of androgen and increased inflammatory response caused by MPs exposure are closely associated with prostate cancer progression.”²⁰

D) Cardiovascular Risks

According to Harvard Health, “Concerns about the health effects of microplastics continue to mount. Now, a new study finds that people with microplastics in the plaque clogging their neck arteries were far more likely to have a heart attack or stroke than people with plastic-free plaque. When researchers tested the plaque removed from the neck arteries of 257 people, they found tiny particles of plastic — mostly polyethylene but also polyvinyl chloride — in 58% of the people. After nearly three years, the rate of heart attack, stroke, and death was 4.5 times higher in people with microplastics in their plaque than those without.”²¹

“Among patients with asymptomatic high-grade (>70%) carotid artery stenosis who were undergoing carotid endarterectomy, those with evidence of MNPs within the carotid plaque had a greater incidence of a composite of myocardial infarction, stroke, or death from any cause than patients who did not have evidence of MNPs within the atheroma. Observational

¹⁸ [Alexandre Vallée, Pierre-François Ceccaldi, Marie Carbonnel, Anis Feki, Jean-Marc Ayoubi](https://doi.org/10.1111/1471-0528.17687), “Pollution and endometriosis: A deep dive into the environmental impacts on women's health,” First published: 09 October 2023.
<https://doi.org/10.1111/1471-0528.17687>

¹⁹ <https://www.aihw.gov.au/reports/chronic-disease/endometriosis-in-australia/contents/impact/economic-burden>

²⁰ Identification and analysis of microplastics in para-tumor and tumor of human prostate,” Deng, Chenyao et al. *eBioMedicine*, Volume 108, 105360
[https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964\(24\)00396-7/fulltext](https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(24)00396-7/fulltext)

²¹ <https://www.health.harvard.edu/heart-health/microplastics-in-arteries-linked-to-heart-disease-risk>

data from occupational-exposure studies suggest an increased risk of cardiovascular disease among persons who are exposed to plastics-related pollution”²²

“Experimental data in preclinical models suggest that MNPs can foster oxidative stress, platelet aggregation, cell senescence, and inflammatory responses in endothelial and immune cells while promoting a range of cardiovascular and metabolic alterations that can lead to disease and premature death.”²³

Environmental Risks

a) Water

Last week Wingecarribee’s Water Treatment Plant won the 2024 Best Tasting Tap Water award, presented by the Water Industry Operations Association of Australia. Water samples from across NSW and ACT were judged on factors such as taste, clarity, colour and odour.²⁴ Should Plasrefine be allowed to operate in such close proximity to creeks that flow directly into Sydney / Goulburn water catchment sources, it is not only the award-winning Highlands water that will be under threat.

Given that a federal parliamentary inquiry into the health effects of PFAS “forever chemicals” was announced in August, and Australian drinking water guidelines are also currently under review, it staggers belief that the NSW Government would approve a Plastics Refinery only 10m away from the Wingecarribee River. Water run-off containing microplastics may enter the Wingecarribee River, which feeds into the Warragamba Dam (which supplies Sydney and Goulburn’s drinking water). Greatest risk may be from failure of water filtration processes.

The current PFAS water contamination in the Blue Mountains should be a cautionary tale.²⁵ Indeed, Blue Mountains residents have been in touch with us to offer support and collaboration as we fight Plasrefine.

²² Microplastics and Nanoplastics in Atheromas and Cardiovascular Events
Raffaele Marfella, Francesco Prattichizzo, Celestino Sardu, Gianluca Fulgenzi, Laura Graciotti, Tatiana Spadoni, Nunzia D’Onofrio, and Giuseppe Paolisso Published March 6, 2024
N Engl J Med 2024; [VOL. 390 NO. 10](#)

²³ Francesco Prattichizzo, Antonio Ceriello, Valeria Pellegrini, Rosalba La Grotta, Laura Graciotti, Fabiola Olivieri, Pasquale Paolisso, Bruno D’Agostino, Pasquale Iovino, Maria Luisa Balestrieri, Sanjay Rajagopalan, Philip J Landrigan, Raffaele Marfella, Giuseppe Paolisso, Micro-nanoplastics and cardiovascular diseases: evidence and perspectives, *European Heart Journal*, Volume 45, Issue 38, 7 October 2024, Pages 4099–4110, <https://doi.org/10.1093/eurheartj/ehae552>

²⁴ Southern Highlands Express, Issue 225, 13 November 2024.

²⁵ “Synthetic PFAS chemicals flowing into a Blue Mountains dam in the Sydney drinking water catchment have been detected at levels more than 50 times higher than Australian drinking water standards.”

<https://www.smh.com.au/national/nsw/white-hot-cancer-linked-chemicals-flowing-into-dam-at-50-times-safe-level-20240916-p5kay1.html>

The NHMRC (National Health and Medical Research Council) recently released proposed new drinking water guidelines for public consultation, which the NSW Government has welcomed.²⁶ Their actions in approving Plasrefine 10m from water catchment sources do not match their rhetoric on improving water safety standards.

We don't actually know what chemicals would be in mass production less than 10m from water catchment sources. Plasrefine has not disclosed the synthetic additives it would use in the recycling process. Structural engineering lecturer at the University of Wollongong Dr Aziz Ahmed warned: "A lot of concerning chemicals can get into the recycled plastics and then eventually leach into the environment." He also expressed concern that Australia was behind international standards to manage additives in plastic recycling and should follow the lead of the European Union, which is setting stringent guidelines.²⁷

We are also concerned about the amount of water the facility will use, given that plastics recycling is a thirsty industry. The proposal states that they will harvest rainwater from tanks. Good luck with that. I have lived on rainwater tanks as long as I've lived in the Highlands. While we are known for higher than average rainfall compared to surrounding areas, we still experience droughts and periods of low rain. We burned like everyone else in 2019, and our national parks still bear those scars. Will Plasrefine be using our local water if rainwater is insufficient?

b) Air

As Srinidhi Sridharan et al examine in their critical review of "Microplastics as an emerging source of particulate air pollution" in the [Journal of Hazardous Materials](#): "Airborne MPs can have direct exposure and impacts on human health. Airborne MP dust particulates stay in the air for a prolonged period compared to natural dust aggregates of the same size, which facilitate their transport to distant locations ."²⁸

Furthermore, as Marfella et al have demonstrated: "MPs have been found in drinking water and air, also in a form bound to fine, inhalable particulate matter with an aerodynamic diameter of 2.5 µm or less (PM_{2.5}) and transported long distances by wind."²⁹

²⁶ <https://www.nsw.gov.au/media-releases/nsw-government-welcomes-nhmrc-proposed-guidelines-on-drinking-water-and-pfas>

²⁷ <https://www.abc.net.au/news/2024-10-16/plastic-recycling-plant-approval-recommendation-moss-vale/104467550>

²⁸ Srinidhi Sridharan, Manish Kumar, Lal Singh, Nanthi S. Bolan, Mahua Saha, "Microplastics as an emerging source of particulate air pollution: A critical review," [Journal of Hazardous Materials Volume 418](#), 15 September 2021.

²⁹ Microplastics and Nanoplastics in Atheromas and Cardiovascular Events
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The ability of MPs to travel “long distances by wind” is a particular concern for Plasrefine given the notoriously strong and wild highlands winds. You cannot fathom how strong the winds are unless you’ve wintered here.

In “Evaluating the Effects of Air Pollution from a Plastic Recycling Facility on the Health of Nearby Residents,” Xin Zhaoa, et. al evaluated “how exposure to airborne volatile organic compounds emitted from a plastic recycling facility affected nearby residents, in a cross-sectional study. Individuals >10 years old were randomly sampled from 50 households at five sites and given questionnaires to complete. We categorized the subjects by distance from the recycling facility and used this as a proxy measure for pollutant exposure. . . We calculated the odds of residents living 500 or 900 m away from the facility reporting mucocutaneous and respiratory symptoms using a reference group of residents 2,800 m away. Self-reported nasal congestion (odds ratio=3.0, 95% confidence interval=1.02-8.8), eczema (5.1, 1.1-22.9), and sore throat (3.9, 1.1-14.1) were significantly higher among residents 500 m from the facility. Those 900 m away were also considerably more likely to report experiencing eczema (4.6, 1.4-14.9). Air pollution was found responsible for significantly increased reports of mucocutaneous and respiratory symptoms among nearby residents. Our findings confirm the effects of pollutants emitted from recycling facilities on residents’ health and clarify that study design differences did not affect the results.”³⁰

As Swinnerton et al. articulate in their recent 2024 article, “The emission and physicochemical properties of airborne microplastics and nanoplastics generated during the mechanical recycling of plastic via shredding,” the airborne particulates produced by “shredding,” the very process Plasrefine proposes to undertake in the Highlands, has “not been extensively examined in current scientific literature.” We do not want to be research subjects for this high-risk experiment in locating a plastics refinery so close to humans, endangered species and sensitive riparian and land ecosystems. Given the high volume of medical research demonstrating the threat air pollutant MNPs pose to human health, it is reasonable to wonder if the NSW State Government would be liable to residents to experience adverse health effects if Plasrefine is approved.

“Plastic shredding is frequently used in mechanical recycling facilities and emits airborne particulates that have not been extensively examined in current scientific literature. Our findings suggest that such operations could expose workers to airborne MPs/NPs, in some scenarios to concentrations well over 1,000,000 particles/cm³.”³¹

Furthermore, the risks of MPs are exacerbated when exposed to the environment: “The risk factors associated with MPs increase with weathering of plastic waste when exposed to environmental conditions (Mao et al., 2020). Weathering mechanisms and behaviour of the airborne MPs are different from terrestrial or aquatic plastics . The MPs that get exposed to the environment (ultraviolet rays, hydrological conditions such as turbulence)

³⁰ Xin Zhaoa, Toshihide Tsudab, and Hiroyuki Doia , Evaluating the Effects of Air Pollution from a Plastic Recycling Facility on the Health of Nearby Residents”, *Acta Med. Okayama*, 2017 Vol. 71, No. 3, pp. 209-217.

³¹ Swinnerton, S., Su, J. & Tsai, C.S.J. The emission and physicochemical properties of airborne microplastics and nanoplastics generated during the mechanical recycling of plastic via shredding. *Sci Rep* 14, 24755 (2024). <https://doi.org/10.1038/s41598-024-73775-0>

become ‘aged’ due to weathering and aged MPs pose a greater threat to the environment and health than the virgin (fresh/unaged) MPs (Mao et al., 2020, Song et al., 2021).”³²

The proponent’s preposterous directive to residents to stay indoors to avoid airborne pollutants bears repeating, once again. Do the proponent and the NSW government really believe nearby residents and students should stay shut in their homes to protect their health? Anyone who lived through the 2019 Black Summer fires remembers what that was like. Even Sydneysiders (as we were then) remember sealing windows and doors, not going outside without a particle mask. Would you be willing to live like that?

c) Threat to habitat and health of native species and ecosystems

Removal of habitat for the microbat recorded by the EPA (on the red list for endangered species).

Disturbance to platypus habitats during building and operation of site. Run-off may increase water sedimentation and cause riverbank erosion diminishing habitat of local downstream platypus. A state government grant of \$500,000 to Wingecarribee Shire Council was recently received to monitor and collect data on our platypus population, another endangered species (Southern Highlands Platypus Conservation Project).

Other potential biodiversity loss includes removal of tableland swamp meadows, removal of mountain grey gums, removal of habitat for southern myotis and large bent winged bat – listed as endangered and vulnerable, respectively. Other direct and indirect impacts due to vegetation removal on birds, insects, frogs, reptiles, koalas and kangaroos, and eastern long necked turtle (*Chelodina longicollis*).

Roads and infrastructure

Increased heavy vehicle traffic creating noise pollution, air pollution, dust, vibration, potential accidents, potential fatalities of wildlife, potential importation of weeds from other areas, increased degradation of already stressed roads.

Increased vehicular traffic from worker light vehicles entering and exiting the site creating noise, dust, potential accidents, vibration

For an expert submission on this topic, I refer the committee to the public hearing speech of Felicity Cadwallader, a lawyer specializing in environmental planning on Day 2 of hearings.

Fire Risk

As I write these words, a Plastics Recycling Facility in South Kempsey is on fire and the RFS has warned of toxic smoke and asked residents to stay inside.

There have been over 19 devastating fires associated with plastics facilities since 2019 in Australia alone. Fires are common in these facilities, with temperatures reaching ~1000

³² Srinidhi Sridharan, Manish Kumar, Lal Singh, Nanthi S. Bolan, Mahua Saha, “Microplastics as an emerging source of particulate air pollution: A critical review,” [Journal of Hazardous Materials Volume 418](#), 15 September 2021.

degrees centigrade (see information on Hume, ACT fire in December 2022). It is usual for much smaller facilities to require 80+ firefighters, 15 pump trucks and 6 hazmat vehicles.

Our local fire services are very small. Moss Vale station is unmanned and entirely voluntary, with only one fire truck. There are only 4 trucks and 1 hazmat vehicle in the Highlands – others are 76km away at Campbelltown (50 mins in no traffic), Goulburn (45 mins in no traffic) or further at Shellharbour.

Fires fuelled by plastic waste may release dioxins, benzene, hydrogen cyanide, cyanide, chlorine, carbon monoxide and VOCs into the environment. Breathing in these fumes has the potential to cause asthma deaths, potential sarcoidosis, cancer, nervous system disorders, genetic impacts, developmental impacts, leukaemia and reproductive disorders.

The risks of fire and water contamination overlap. The suspected source of PFAS contamination in the Blue Mountains was a fire caused by a petrol truck crash over 30 years ago, with fire-retardant chemicals contaminating water that “drains directly down from the crash site into Adams Creek to feed Medlow Dam,” where “tests revealed the presence of synthetic PFAS chemicals at 3.4 micrograms per litre – more than 40 times the current safe drinking water guidelines.”³³

Community Mental Health

Many in our community are experiencing PTSD brought on by the decade-long battle against Hume Coal, followed immediately by four years fighting Plasrefine.

We barely had time to catch our breath after the “Battle for Berrima” against Hume Coal, which was rejected by the IPC on 21 August, 2021. Then a couple months later in November 2021, we learned that a Chinese company whose owners have been censured for air pollution by Beijing’s Environmental and Ecological Bureau intended to build “Australia’s largest plastics refinery” in a residential area 2km from Moss Vale town centre.³⁴ Most distressing was the fact that the NSW government supported this application by an overseas company owned by individuals with a history of environmental censure. (I understand the IPC does not evaluate the “reputation of the proponent.” I include this information as it is relevant to the community’s collective distress.) We do not simply feel abandoned and betrayed by our government, we are traumatized.

³³ <https://www.smh.com.au/national/new-forever-chemical-tests-zero-in-on-contamination-source-20241022-p5kkdj.html>

³⁴ A 2020 scoping report submitted by GHD Group, an international engineering consultancy hired by Plasrefine, referred to a “Mr Lyu” as “principal technical director.” Companies owned by Lyu Yalin have been censured by Beijing’s Environmental and Ecological Bureau. Public notices on the bureau’s website show four regulatory infractions from 2011 including air pollution, with Kelilier, a company owned and operated by Mr Lyu, being fined \$6600 in March last year for monitoring failures.

<https://www.smh.com.au/environment/sustainability/a-big-blue-in-a-small-southern-highlands-town-over-a-giant-plastics-plant-20220111-p59nhp.html>

Highlanders did not even get 3 months of peace after Hume Coal's rejection. We had barely two months of sleeping through the night without waking to anxiety that our water would be contaminated, our fresh air polluted, our health imperilled and our homes devalued.

Before my career as a creative writer and Medical Humanities researcher (PhD), I was a trauma-informed clinical social worker (BCSW). My professional assessment is that this community is burned out and suffering from ongoing traumatic stress caused by fighting Hume Coal for a decade, then Plasrefine for 4 years. *Highlanders' health, homes, farms, businesses and entire way of life have been under threat for almost 15 continuous years. To put it bluntly, we are not coping.*

The risk to our collective mental health is grave. Rural Australians are at higher risk for suicide and depression, suicide rates are particularly acute in young men.³⁵ Many Australians, but especially young people—are experiencing high levels of climate anxiety. Two-thirds of young Australians (67%) said climate concerns are having a negative impact on youth mental health, with a particularly significant number of young females (74%) reporting a negative impact.³⁶ Chronic diseases such as endometriosis and thyroid disease (which are exacerbated by exposure to MPs) also significantly escalate depression, anxiety and suicide risk.³⁷

Locals are also experiencing extreme financial anxiety about Plasrefine. The threat is acute for local businesses like cellar door vineyards, farm-to-plate destination restaurants and the booming wedding and wellness industries, which depend on our pristine natural environment to succeed. Home owners are deeply worried about declining property values if Plasrefine is approved (given that Australians have to invest a disproportionate amount of their income into their primary dwellings, this is a substantial hardship). We know that financial hardship is also a risk factor for anxiety, depression and suicide. Research clearly shows that financial insecurity is associated with increased suicide risk. A 2020 study into deaths by suicide in Victoria found 42% of people who died by suicide were under financial stress.³⁸

³⁵ <https://www.ruralhealth.org.au/sites/default/files/publications/nrha-rural-suicide-factsheet-july2021.pdf>

³⁶ [https://www.orygen.org.au/About/News-And-Events/2023/New-research-shows-the-scale-of-climate-distress-a#:~:text=Two%2Dthirds%20of%20young%20Australians%20\(67%25\)%20said%20climate%20concerns,%25\)%20reporting%20a%20negative%20impact.](https://www.orygen.org.au/About/News-And-Events/2023/New-research-shows-the-scale-of-climate-distress-a#:~:text=Two%2Dthirds%20of%20young%20Australians%20(67%25)%20said%20climate%20concerns,%25)%20reporting%20a%20negative%20impact.)

³⁷ Stephanie J Estes, Carrie E Huisinigh, Stephanie E Chiuve, Natalia Petruski-Ivleva, Stacey A Missmer, Depression, Anxiety, and Self-Directed Violence in Women With Endometriosis: A Retrospective Matched-Cohort Study, *American Journal of Epidemiology*, Volume 190, Issue 5, May 2021, Pages 843–852, <https://doi.org/10.1093/aje/kwaa249>

<https://www.thyroid.org/patient-thyroid-information/ct-for-patients/june-2018/vol-11-issue-6-p-8-9/>

³⁸ <https://www.suicidepreventionaust.org/opinion-the-cost-of-living-and-dying/>

Conclusion

Australia has a sad history of destroying communities that depend on tourism to benefit high-polluting industries. Two obvious examples: The Great Barrier Reef and the Hunter Valley. Hume Coal already attempted this in our community. We remain deeply grateful to the IPC for preventing that from happening, and we humbly beg you come to our aid once again.

Re-reading the IPC's statement on the Hume Coal decision, I was struck by how perfectly it echoes the issues we once again face in relation to Plasrefine. Like Hume Coal, Plasrefine also "does not achieve an appropriate balance between relevant environmental, economic and social considerations."

"In summary, the Commission found:

- The project will pose an unacceptable risk to Sydney's drinking water catchment.
- The Project will result in in adverse social impacts relating to:
 - * residents' way of life
 - * the community
 - * surroundings
 - * personal and property rights, and
 - * the community's fears and aspirations.
- The Project is incompatible with surrounding land uses because:
 - * the Project would impact existing and desired future land uses, such as rural-residential, small-scale agricultural and tourism land uses.
 - * the Project would result in land use conflicts and social impacts that cannot be appropriately managed and would have long-lasting negative amenity impacts on surrounding landholders."³⁹ (quote abridged to exclude clauses specific to Hume Coal)

I respectfully urge the IPC to once again protect the Highlands by entirely rejecting this development. Simply imposing conditions is inadequate, given the close proximity to homes, schools, water catchments, farms and medical research. I implore you to reject the development outright. If you apply the same criteria as above from the Hume Coal judgement, it looks like an open and shut case. On behalf of my family, community, and all those in Sydney and Goulburn who drink the water that originates here, I sincerely hope you agree.

With thanks and best wishes,

Dr Lindsay Tuggle Sloan

[REDACTED]
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[REDACTED]

³⁹ <https://www.ipcn.nsw.gov.au/news/2021/09/ipc-refuses-hume-coal-project>