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Nature Conservation Saves for Tomorrow

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22nd of January 2025

Dear Dr Dillon,

Request that Blue Mountains City Council does not approve synthetic turf at Summerhayes Park and other council sporting fields.

The Blue Mountains Conservation Society (the Society) is a community-based, volunteer organisation with 900 members. Our mission is to help protect, conserve and advocate for the natural environment of the Greater Blue Mountains.

According to a recent article in the "The Blue Mountains Gazette", Cr Rodrigo will bring a motion to the Blue Mountains City Council's next meeting in January 2025, with an aim of securing funding for synthetic turf for Summerhayes Park in Winmalee.

The Society asks:

1. That the Blue Mountains City Council (BMCC) at this time does not approve synthetic turf for Summerhayes Park or other similar sporting fields or places where there will be runoff into creeks or streams;
2. That the BMCC instead considers all adverse environmental and public health risks associated with the use of synthetic turf and consults with local communities;
3. That the BMCC investigates the more recent best-practice use and maintenance of natural turf as detailed in the 2022 Chief Scientist and Engineer's report[1] to the NSW Government;
4. That BMCC considers a ban on synthetic turf in line with current considerations in the Netherlands[2].

The Society recognises that sporting fields are an important asset for our community, playing a vital role in public health, and that extreme weather events are affecting the functionality of the fields due to wash-outs after heavy rains. We congratulate BMCC for working to ensure that our community has

[1] https://www.chiefscientist.nsw.gov.au/__data/assets/pdf_file/0004/542263/CSE-Synthetic-Turf-Review-Final-Report.pdf
[2] https://ministryofsport.com/the-netherlands-to-phase-out-synthetic-turf-over-health-and-environmental-concerns/

appropriate access to sporting fields.

However, the Society is of the view that the adverse environmental impacts associated with the use of synthetic turf are insufficiently researched and understood and may lead to potential harmful effects on the Blue Mountains fragile eco-systems and bio-diversity. We do not consider synthetic turf a sustainable solution to the problem of waterlogged fields for a park in a city that lies within a World Heritage Area. Since the Society has a focus on the natural environment, we have not considered the impacts on human health in any detail but acknowledge that this is addressed in the Chief Scientist and Engineer's report.

Our attached report considers the following points in detail:

1. Summerhayes Park location close to Blue Gum Swamp Creek;
2. Findings of the Chief Scientist and Engineer's report to NSW Government 13 October 2022;
3. Rubber, plastic and microplastic pollution from synthetic turf polluting local waterways;
4. Potential of synthetic turf to burn and contribute to bushfire risk and produce toxic gases;
5. Heat impacts from synthetic turf on hot days;
6. Ongoing damage to soil under synthetic turf;
7. Flooding effects of turf in heavy rain events;
8. Maintenance of synthetic turf and end-of-life disposal;
9. NSW Government and BMCC Action Plan – reducing plastics and microplastics.

Conclusion

It is clear from the NSW Chief Scientist and Engineer's Report, including evidence from overseas and Australian researchers, that synthetic turf has many problems, both with respect to the local environment and public health.

The Society is of the view that its use does not meet the BMCC's own sustainability goals, nor the NSW Plastic Action Plan because of the considerable run-off of micro-fibres and recycled tyre crumb infill granules into waterways and the lack of recycling facilities for synthetic turf at end-of-life. Its use does not contribute to a sustainable future here in the Blue Mountains City, a city in a World Heritage Area, due to its risk to the natural environment and public health.

Current industry standards for synthetic turf in relation to flammability in bushfires are not fit-for-purpose; there is also a poor understanding of materials and chemicals used in the synthetic turf along with their toxic nature if ignited. This is of great concern given that the Blue Mountains City is in a highly bushfire prone area.

The Chief Scientist and Engineer's report outlines successful improvements in using and maintaining natural turf that are being implemented by councils in other Local Government Areas and the Society encourages the BMCC to investigate these.

The Society asks that the BMCC delays making a final decision in respect of using synthetic turf at Summerhayes Park until a detailed assessment of all risks and alternatives has been made, and the community consulted.

The Society also requests BMCC investigates "banning" all synthetic turf on sporting fields and open public land in line with current action in Europe and the Netherlands.

Thank you for taking the time to consider our concerns. If you wish to discuss this matter with me, please contact me on president@bluemountains.org.au

Yours sincerely,

Annette Cam
President

Report on potential use of Synthetic Turf at Summerhayes Park, Winmalee.

Summerhayes Park Location

BMCC will be aware that Summerhayes Park in Winmalee is approximately 50 m from Hawkesbury Road. Between the park and Hawkesbury Road lie several houses. Summerhayes Park is surrounded by bushland that appears to be in good condition and approximately 150 m behind the park lies Blue Gum Swamp Creek (Figure 1). Blue Gum Swamp Creek runs into Lynchs Creek, a tributary of the Hawkesbury River. Water runoff from the park will make its way to this creek. Any impacts from increased flammability of the synthetic turf surface and toxic fumes released present an increased level of harm to those neighbouring residents.

Figure 1 Summerhayes Park Winmalee

Chief Scientist and Engineer's report to NSW Government, 13 October2022

In November 2021, the then Minister for Planning and Public Spaces (Hon.Rob Stokes, MP) requested the Chief Scientist and Engineer provide to the NSW Government, independent expert advice on the use of synthetic turf in public open spaces in NSW. The final report was released on the 13th of October 2022.[3]

The report states that synthetic turf:

- poses environmental issues and pollution impacts;
- has a likely lifespan in Australia of between 10 and 15 years;
- is problematic to recycle in Australia and so it is likely to end up in landfill;
- contributes to fire risk in bushfire prone areas and when it burns, it produces toxic gases;
- can become excessively hot on hot, sunny days if uncovered, contributing to "heat island" effects and burns on human skin;
- has a higher carbon footprint than natural turf in its production and laying;

[3] https://www.chiefscientist.nsw.gov.au/__data/assets/pdf_file/0004/542263/CSE-Synthetic-Turf-Review-Final-Report.pdf

- loses tens of hundreds of kilograms of infill and turf fibres a year into the runoff from the field;
- contributes to PFAS chemical pollution of the water;
- is of similar high maintenance to natural turf, when maintained properly to ensure it provides a good playing surface and lasts as long as possible.

Rubber, plastics and microplastic pollution

Infills used in synthetic turf surfaces are most commonly sand, cork or recycled tyre crumb rubber infill, although crumb rubber is most used in Australia. The Society does not know which would be proposed for use in Summerhayes Park.

Recycled tyre Crumb rubber (SBR) is primarily sourced from recycled end-of-life tyres, which may contain hazardous levels of toxic metals such as zinc and lead and carcinogenic polyaromatic hydrocarbons (PAHs). The synthetic turf also contains PAHs (a recognised toxic carcinogen), lead, and PFAS amongst other chemicals. Given the recent scare in 2024 in the Blue Mountains when high levels of PFAS were discovered in local waterways and dams, the Society is of the view that activities that further pollute our waterways must be avoided. Researchers at the Western Sydney University discovered high levels of PFAS in wild platypus[4] across various areas of NSW indicating that these chemicals pose a threat also to our wildlife.

As the Chief Scientist and Engineer's report states, the origin and composition of the crumb rubber infill in Australia is not always known and hence the components of the rubber are not clear. There are moves in Europe[5] to remove levels of potentially harmful chemicals from synthetic turf infill to reduce potential hazardous effects on the environment and people's health.

Crumb rubber granules and broken pile fibres are classified as **microplastics**, being 1-5mm granules with a 46 per cent polymer content. Crumb rubber infill can be lost by players "walking it off the field" in clothes and shoes. **Synthetic turf is** also lost from fields. Both crumb rubber and blades of synthetic turf can also be lost in runoff during rain, particularly heavy rain events. Microplastic pollution is an emerging environmental and public health concern and we should be avoiding any contribution to the waterways of the World Heritage Area.

The Chief Scientist and Engineer's report states in the Executive Summary that *". . . there is evidence that both rubber infill and turf fibre blades from synthetic turf fields are found in waterways in NSW."* They also report research that states*: "synthetic turf fields without structures to reduce infill loss will wash tens to hundreds of kilograms of infill per year into stormwater systems or waterways. The amount of turf fibres lost from a synthetic turf field is likely to be in the 100s of kilograms per year, with the amount increasing for fields near the end of life or under poor maintenance." (Chief Scientist and Engineer's report Executive Summary page vi)*

The synthetic turf also contains other problematic chemicals (including PFAS, zinc, lead, arsenic, phthalates, heavy metals) and possibly more depending on the source of the infill.

The blades of "grass" in the synthetic turf are now generally made of polyethylene. Polyethylene degrades in UV light, is highly flammable and when it burns, releases toxic chemicals. It is a non-biodegradable plastic and its manufacture contributes to the production of greenhouse gases.[6] Whilst it can be recycled, the facilities for this are not readily available in NSW and hence, the disposal option

[4] https://www.westernsydney.edu.au/newscentre/news_centre/more_news_stories/pioneering_research_discovers_pfos_in_platypuses

[5] https://www.estc.info/reach-restriction-intentionally-added-microplastics-eu-voted-for-transition-period-of-8-years/

[6] https://material-properties.org/polyethylene/

for end-of-life synthetic turf is in landfill[7].

Potential to burn and contribute to fire risk and produce toxic gases

Bushfire risks are due to three risk factors:

- Ember attacks
- Radiant Heat
- Direct flames

Because of the low melting point of the materials in synthetic turf, they can easily be ignited by all three forms of attack. In their research paper, Yeoh et al from UNSW state that the "*composition of synthetic turf . . . presents risks in bushfire prone areas*" with SBR (infill from scrap tyres) posing the highest fires risk.[8] They further state: "*When the turf burns, the toxicity and its associated negative environmental impact have been found to be more severe at elevated temperatures during a bushfire."*

In comparison, natural grass turf fields that are well-maintained in a short, green condition is not easily ignitable.[9]

Heat impacts

Australia's climate is extreme, with heavy rain events and very hot summer days, and synthetic grass may be less suitable in Australia than in other countries with a milder climate. Synthetic grass becomes less durable if it is exposed to extreme weather and heavy foot traffic, such as well-used sporting fields.

In addition, synthetic turf poses potential health risks for users, especially on uncovered sporting fields subject to high exposures of direct heat from the sun and especially to young children who are closer to the ground. Common complaints from playing on synthetic grass include: heatstroke, burns from sliding on the hot grass blades, severe dehydration.

The Society's view is that these hazards are not compatible with the BMCC's aim to be more environmentally and socially responsible.

Radiant heat is the most researched issue concerning synthetic turf and the heating effect does not only affect the radiant heat on the field, but also the surrounding environment, increasing average temperature in the immediate surroundings, exacerbating urban heat.

According to Dr Pfautsch, a researcher at Sydney Western University, it is well established that synthetic turf radiates considerable heat on a sunny summer day in uncovered areas. Dr Pfautsch's report[10] states that published studies record the maximum surface temperature of artificial turf on sunny days in the range of 53 °C to 93 °C. These temperatures are between 14 °C and 64°C hotter than natural turf measured in the same studies. This level of heat at the surface burns the skin on feet, overheats shoes and creates heat levels above the ground so high that they can cause heat stress.

You can listen to Dr Pfautsch speak about the heat issue with synthetic turf on ABC radio (Tuesday 16 March 2021) by following this link https://www.abc.net.au/listen/programs/sydney-breakfast/pfautsch/13252694

Ongoing damage to soil

Synthetic turf affects soil ecosystems because it restricts the amount of air and water entering the soil,

[7] Lee and Hime: NSW Ministry of Health (2022). Health impact of synthetic turf (artificial grass). Found in Chief Scientist and Engineer's report 2022.
[8] Yeoh et al "Use of Synthetic Turf in Bushfire Prone Areas" UNSW in Chief Scientist and Engineers report Appendix 10.
[9] Chief Scientist and Engineer's report page 25.
[10] https://www.westernsydney.edu.au/__data/assets/pdf_file/0008/1995857/Synthetic_Turf_in_Public_Places.pdf

overheats the soil thus degrading the quality of soil and preventing nutrients from circulating. This in turn inhibits the growth of beneficial organisms – microbes, fungi, insects and other small soil organisms. In comparison, natural turf encourages healthy soil in urban green spaces with concurrent soil life, is a crucial part of sustainable society, helps communities to be more resilient to climate change and creates a more resilient urban environment.

Flooding effects

Synthetic turf is often used on sporting fields to counteract the effects of waterlogged fields and damage to natural turf sporting fields with consequent loss of access for play. However, synthetic turf can also sustain substantial damage in severe rainfall or flooding events, which adversely affects the durability and life-span of synthetic turf and leads to increased loss of turf fibres and infill into local waterways. Flooding can also lead to blockage of drainage pores in the synthetic turf necessitating partial or entire replacement, adding to waste and plastic pollution.

Maintenance and end of life

Natural turf needs maintenance and replacing it with synthetic turf is often touted as being a low-maintenance option.

The Chief Scientist and Engineer's report states (page 17) that: *"All turf surfaces, both natural and synthetic, require regular and high-quality maintenance to maximise performance, carrying capacity, safety of users and longevity."*

Furthermore, the report states (page 33): *". . . no surface type is 'low cost', and none will perform well under 'set and forget' conditions."*

Sunlight, heat, liquids, oxygen and ozone can breakdown synthetic turf during the lifetime of use which can be over 10 – 15 years.[11] Continuous infill maintenance is required over the life of the surface to replace what is lost and or compacted. As mentioned previously, this includes substantial amounts of annual replacement of lost or compacted infill. As the turf ages, the amount of plastics lost annually increases. Synthetic turf requires brushing to restore the blades to their correct position, and cleaning to remove moulds and animal droppings.

Despite claims that synthetic turf can be recycled at the end of its life, the opportunities for this are limited in Australia so the most likely fate of the field is in landfill. This is not consistent with a goal to achieve a circular economy and NSW goals to reduce plastic waste and micro plastics.

The Chief Scientist and Engineer's (page 29) reports that *"Disposal will become a pressing issue in NSW in the coming decade as existing synthetic fields reach end of life. Councils reported challenges in finding suitable end of life strategies."*

NSW Government and BMCC Action Plan – reducing plastics and microplastics

The BMCC Sustainability Model, the **Blue Mountains Community Strategic Plan 2035**[12] presents the objectives and strategies BMCC will implement to actualise the vision of becoming a more **sustainable and successful Blue Mountains by 2035**, environmentally, socially and economically.

Relevant to this issue, this Community Strategic Plan 2035, BMCC states:

- *"As a City surrounded by a World Heritage National Park we strive to minimise the impact of our urban footprint on the natural environment and to be a model for sustainable living." (Page 29)*

[11] Cheng et al., 2014 in Chief Scientist and Engineers report page 132

[12] https://www.bmcc.nsw.gov.au/sites/default/files/docs/Sustainable%20Blue%20Mountains%202035_0.pdf

- PROTECT (page 30):
    - Strategy 2.1b:*Protect, maintain and enhance the City's natural waterways, water catchments and groundwater."*
    - Strategy 2.2a: "*Promote and encourage bushfire and emergency management preparedness."*
- CARE (page 37):
    - Strategy 3.3a: *"Support circular economy initiatives, encourage responsible resource use and low-consumption, environmentally aware lifestyles."*
    - Strategy 3.3b: *"Minimise waste – avoid, reduce, reuse, recycle.*

The **NSW Government's "NSW Plastic Action Plan"** [13] was introduced in 2021 to manage plastics throughout its entire lifecycle. The Action plan states the importance of, and the Government's intent to, manage and reduce plastic waste and move to a circular economy. Even though the NSW Plastic Action Plan does not directly mention synthetic turf, plastic waste from this product is difficult to manage sustainably and its use does not align with the goal of implementing a circular economy.

In addition, the production of synthetic turf has a larger carbon footprint than natural grass.

The Chief Scientist and Engineer's report quotes research by Meil and Bushi (2007) which states: *"Preliminary studies indicated that synthetic turf has a larger carbon footprint than natural turf when considering the whole product lifecycle from manufacturing, transporting, installing, maintaining and to final disposal."*

[13] https://www.epa.nsw.gov.au/your-environment/plastics/plastics-action-plan