



Use of Local fields in Bayside Council, NSW - Case Study

Local Parks - Overused, underfunded, neglected or ignored

*Synthetic fields - oversupplied, environmentally questionable,
territorial*

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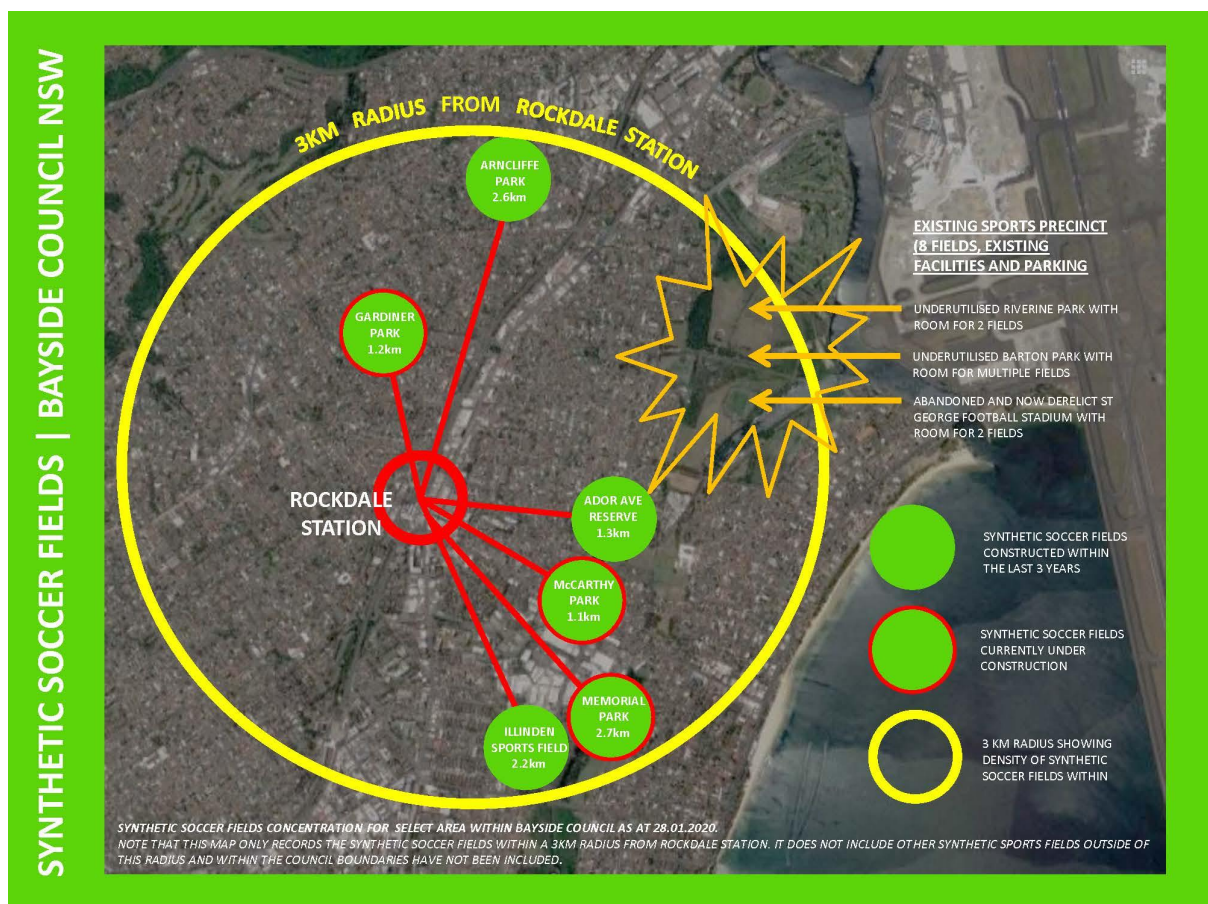
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1. Current situation - Local Parks & Synthetic Builds

In the Bayside LGA are **six synthetic fields** either under construction or completed. The funding for these fields has been provided by the NSW and Federal governments.

1. Arncliffe Park. Final Cost \$4m Funded by DPIE via Priority Precinct Funding (completed - April 2020) type - single field
2. Gardiner Park Allocated \$2.5m DPIE via Priority Precinct Funding (under construction) Full value \$3.1m - single field
3. Ador Reserve \$4.25M (PCYC precinct) (completed) - multiple fields
4. J Graham (PCYC precinct) Allocated - \$28 Million - NSW Transport M6 (under construction)
5. Brighton Memorial Playing fields. NSW Transport. M6 (under construction)
6. Illenden at Bicentennial Park Rockdale (completed) is the only PL1 in this LGA. Probably the first synthetic in Bayside. Note: The club agreed to pay 14% towards sinking funds. License to Illendin with conditions that Bayside Council is responsible for capital repairs and structural rehabilitation.



1.1 Grass Parks in Banksia - four choices

Banksia straddles both sides of the Princes Highway, over West Botany Street and over towards the edges of Muddy Creek, opposite Sydney Airport. In the Eastern corner of this suburb are several large grass parks, Riverine and Barton. The St George soccer stadium is located in Barton Park.

Both the soccer stadium and surrounding fields have fallen into relative disrepair since being the subject of DA applications from a developer since 2002, and are also known as the Cooks Cove precinct.

Top left is Gardiner Park, in the western side of Banksia

Top right is Barton Park

Bottom left is Riverine Park

Bottom Right is Banksia Field within Riverine



Constrained by substantial contamination and under previous plans plus the construction of state roadworks, three of these parks have been underused for over many years. However, the fields at Riverine park were an overflow area during the Sydney Olympics for soccer and baseball. Banksia field, located in **Riverine Park**, is marked for baseball, but to our knowledge it has not been played on since the Sydney Olympics.

Barton Park, with a condemned stadium has functional soccer fields that are used by a Rockdale club. It was historically one of the first and largest soccer stadiums in Sydney during the 1970s. The last game was played in 2007. Then, the stadium was deemed unfit and has been subject to graffiti and vandalism.

Bayside Council approved a [masterplan for Barton Park in 2020](#) and has allocated \$31 million. The plan includes parking, updated play area, tennis courts and several grass soccer fields. No work has commenced despite the approval of Bayside Council early in 2021. **Gardiner Park** was gazetted as a park in 1913 and is the only park with continuous playing and use in Banksia. It had two cricket pitches, used in summer and hockey was played in winter. Hockey was played at Gardiner Park until 2003 when, due to the boggy surface, they moved to nearby Kyeemagh and converted an old bowling site to the new hockey venue. They recently received a new synthetic pitch with a \$300,000 grant.

Banksia Tigers formed around 2005 and moved into Gardiner Park adding a female team in 2015, and a new clubhouse was built shortly after. A DA exists for this site which allows a maximum of 100 people. The Clubhouse was built for and undertaken by the Banksia Tigers football club (BTFC) with a mixture of \$600,000 grant money from Rockdale Council and State Government. The environmental impact statement was written by the BTFC Club Secretary, Almada Balaghe. We are not aware of his qualifications to undertake this report. (*EIS - Lighting" - in drive*)

Banksia Tigers have grown to 400 members and say the synthetic field is to help develop the [younger players](#).

Gardiner Park is surrounded by houses, and is the only walking distance park on the western end of Banksia. There is no parking and it is listed as Heritage on the Rockdale LEP (Item 179) The nearest grass playing park is Arncliffe (1km away) and is now a synthetic soccer park as well. Both parks used to host cricket in summer which is now not possible as both cricket pitches have been demolished.

Either Barton or Riverine parks would have been a better location for a synthetic field than Gardiner Park, however the cost of remediation due to contamination is thought to be too high a cost. Though Friends of Gardiner Park Inc don't recommend synthetic fields, as correctly installed and maintained natural turf fields are better for the environment and more cost effective, Gardiner Park is the worst possible location for a synthetic field considering other available locations in the same suburb.

1. 2 Priority Precinct - background and actions

Around 2016 Bayside was [given \\$10 million](#) under the Priority Precincts grants to improve parks and cycleways. A workshop was conducted and with over 800 responses a top four list nominated several small parks, cycleways, street improvements and library updates.

Council changed these responses to grant Arncliffe and Gardiner Park synthetic fields.

Residents were initially informed the parks were getting an upgrade (email letter from Malcolm MacDonald). The first mention in any documentation was in the release of the 2018 study - **Arncliffe and Banksia Green Plan** written by AECOM on behalf of the DPIE (in google drive) Note other findings of this report - 'General access to green space is limited due to major roads dissecting the spaces making walkability difficult and unsafe' (page 12). Furthermore, "In general, tree canopy throughout the precinct varies and is fairly low' (also page 12)

The funding was for a DA with community consultation. However, consultation never occurred as both projects were changed to ISEPP with no consultation. For any resident who saw the mention of synthetic in the form of single line items in past council reports, the opportunity to consult was lost. ***This single fact, the lack of community consultation, has created the biggest division in recent Council history.***

Councillors were made aware by a few residents, who saw the item come up on the meeting agenda in July 2020, and requested the synthetic decision should be paused, pending community consultation. Councillors voted for the synthetic field project sometime late in the evening.

The project was announced in [The Leader](#) to the public on July 14, 2020. Australia was under Covid lockdown at that time and the news was not welcomed. The campaign to prevent this field being replaced started with calls to council, councillors and talking to residents.

The most telling part was, with a simple search on the Bayside Council website, there were no plans and no information. Residents were in the dark about their own park.



1.3 Synthetic decisions in this LGA

May 2015. Martin Sheppard from Smart Connections presents his assessment of Rockdale council fields to council. Urbis, on behalf of the Department of Planning, reports on preferred synthetic sites in Rockdale.

October 2015. Bayside puts forward officer (Bobbi Mayne) recommendations that prioritise Illinden and Ador ovals, as recommended by Martin Sheppard. These are the least flood affected and offer multiple fields for use. A cost recovery model is included with a strategy of equity for all Rockdale players.

A new motion is put forward by Councillors Poulos and Nagi to prioritise Arncliffe and Illenden. Councillors Tsounis, Kalligas, Saravinovski and Sedrak agree.

Councillors MacDonald, Barlow, Hanna and O'Brien disagree, preferring to go with the officer recommendations. A rescind corrects this division and it was decided that the first two fields will be at the PCYC precinct and at Illinden Sports Complex. Issues of equity, cost recovery and access were deleted from future builds: themes that will be continually revisited as more fields are built.



(image - Ador Precinct at Rockdale nearing completion - July 2021)

2. ENVIRONMENTAL IMPACT

Bayside is installing the cheapest Grade 3 synthetic field at Gardiner Park containing 100% toxic rubber granules that Europeans don't use anymore and have announced enough concerns to instigate a phasing out. The European Chemical Agency has recommended a ban of infill material on artificial turf pitches.

2.1. Overview Environmental Impacts

- The negatives include the increase in noise on synthetic surfaces, rubbish, lighting, increase in car parking
- Cricket and netball fields and markings were removed, a net loss to a 'range of activities' specific to Gardiner and Arncliffe Parks
- Microplastic pollution: Crumbed rubber granules are visibly escaping from the edges of the fields
- Over 300 chemicals that could potentially be found in the infill material ([ECHA](#) study released)
- Concerns about safety of players and residents through toxic off-gassing in extreme heat events
- Water contamination with PFAS
- Health impact such as heat stress,
- Loss of Biodiversity, soil biota, grass seeds and insects with a trophic impact on local biodiversity primarily birdlife
- Toxic components of infill and synthetic blades of leaching into ground and pollute waterways
- Derived from fossil fuel petrochemical industry
- Produces CO₂ and greenhouse emission during manufacturing and as it degrades and therefore increases carbon footprint
- Increases landfill at end of life
- Impact on microclimate: Increases urban heat island effect on local residents.
- Heat retention of synthetic turf
- Replaces natural grass which allows soil organic carbon sequestration, provides oxygen
- Flash flooding as compacted soil increasing stormwater runoff
- Vertebrate model confirms toxicity to human health of rubber infill
- Enhances infection transmission risk.
- Encourages a microbial community structure primarily defined by anthropic contamination.



An example of unmitigated rubber going into the waterways at the black dots seen are all crumbed rubber granules. The drain goes to Botany Bay.

Increased Urban Heat - Reduction in Park Cooling Effect

Synthetic fields are known to contribute to Urban Heat Island Effect, reduce the Park Cooling Effect and create large expansive areas of impervious surfaces that limits groundwater cooling due to the fact that they absorb heat and radiate heat for up to 6hrs. Refer to any recent studies, reports or work undertaken by Sebastian Pfautsch. Research has found on a 37°C day synthetic fields recorded at 93°C and fields have been recorded in excess of 100°C by Sebastian.

No evidence of testing above this temperature or testing relevant to the climatic conditions is present throughout Australia as indicated in Victoria Synthetic Fields Report.

No reporting re the Heat Stress and Heat Illness impacts relevant to Australia given these fields are predominantly designed for European and American climates. Refer Penn State University Report, below. Provides a brief but detailed overview of Heat Concerns associated with synthetic fields and Government of Western Australia, Department of Local Government, Sport and Cultural Industries, Natural Grass vs Synthetic Turf Study Report, 8 July 2019 also documents the issues relevant to heat impacts.

Environmental Impacts - Biodiversity Loss - Habitat Removal- Microplastic Pollution- Flash Flooding.

Synthetic Fields remove natural carbon sinks, increase carbon footprint, materials sourced and used in synthetic turf have safety concerns, micro-plastic impacts, flora and fauna reduction, end life disposal into landfill, soil regeneration failures, heat dissipation, noise and glare impacts and biodiversity and habitat removal.

The NSW EPA is currently concerned and investigating the levels of Microplastics created as litter from synthetic fields and the impacts of microplastics to the environment. Interestingly, the EPA RAC, Europe, has placed a restriction on the use of intentional infill.

Moreover, the disposal of synthetic turf surfaces at its end of life has not been factored into and currently within Australia there are no means by which to recycle, reuse or repurpose the waste by product from synthetic fields, a requirement needed every 5-7 years due to the surface needing to be replaced. See, Government of Western Australia, Department of Local Government, Sport and Cultural Industries, Natural Grass vs Synthetic Turf Study Report, 8 July 2019, attached below. Pages 33-41.

The Bureau of Meteorology and the CSIRO's latest biannual report on the climate is observing "a more tangible shift in the extremes" and [heavy rain](#) is expected to become more intense which leads to [flash](#) flooding. Synthetic surfaces increase the risk of flash flooding. Significant differences in runoff were observed demonstrating that artificial grass displayed greater volumes and proportion of runoff than living grass.

Increase in Carbon Footprint

The recently released Intergovernmental Panel on Climate Change, AR6, Climate Change 2021: The Physical Science Basis (IPCC Report) and the recommendations contained within this document with regards to Carbon Dioxide CO₂ emissions and the need to limit 'human-induced global warming to a specific level requires limiting cumulative CO₂ emissions, reaching at least net zero CO₂ emissions, along with strong reductions in other greenhouse gas emissions. Synthetic surfacing or artificial turf is a petro-chemical product which requires the use of virgin materials, high levels of processing and production, transportation and disposal at end of life. When considering the entire life cycle, these material impacts of synthetic turf significantly **increase the total CO₂ and greenhouse emission** of this product and far outweigh the emissions that occur from maintaining natural grass according to Simon, R, 2010. 'Review of the Impacts of Crumb Rubber in Artificial Turf Applications', University of California, Berkeley, USA.

In 2017 a report prepared for FIFA – *Environmental Impact Study on Artificial Football Turf* – provides a comparative chart showing the CO₂ total life cycle emissions for various infills. (Eunomia Research & Consulting Ltd for FIFA, March 2017, attached below) According to this report a FIFA standard pitch is 7526 square metres and the chart shows various synthetic turf pitches and the production of between 100kg to 1800kg of CO₂ total life cycle emissions per square metre depending on the infill material and method of disposal. This equates, dependent on the variables already mentioned, to between **750,000 kilograms to 13.2 million kilograms of CO₂ emissions generated from a single (1) full sized FIFA pitch.**

Given the uptake of synthetic fields throughout NSW, and Australia for this matter, with over two and half thousand (2500) fields installed within a ten year period, this equates to nearly thirty three million (32,920,250) tonnes of CO2 and GHG emissions generated from synthetic surfacing or turfing systems and clearly indicates a vast amount of CO2 and GHG emissions generated through the production, installation, maintenance and disposal of synthetic surfacing or artificial turf that would clearly be in contradiction to the recommendations of the IPCC Report and far in excess of the emissions created by natural turf.

Heat Stress Heat Illness Impacts - Untested in Australian Climate - Increased antibacterial resistance

Synthetic Fields create greater risk due to Heat Stress and Heat Illness to users, especially children given their closer proximity to the field due to height and inability of body to regulate heat as well as adults, and surrounding community members due to the increased heat of synthetic fields.

Moreover, concerns exist with “turf burn” associated with synthetic fields and the requirements for players and users to require medical attention to address the skin burns received from sliding on the synthetic surfaces. In Australia lawyers are starting to specialize in lawsuits for increased risk of [injury on synthetic grass](#).

There will continue to be studies on the injuries caused by playing any sport on synthetic compared to natural turf. The one factor that is unique to synthetic are rashes and burns due to both the surface material and the heat of the plastic blades. Sliding and skidding is part of the activity of playing a game, however, synthetic’s heat properties create burns that are not known on natural turf. This is a problem that has no current solution



(image - Dr Mick Battam)

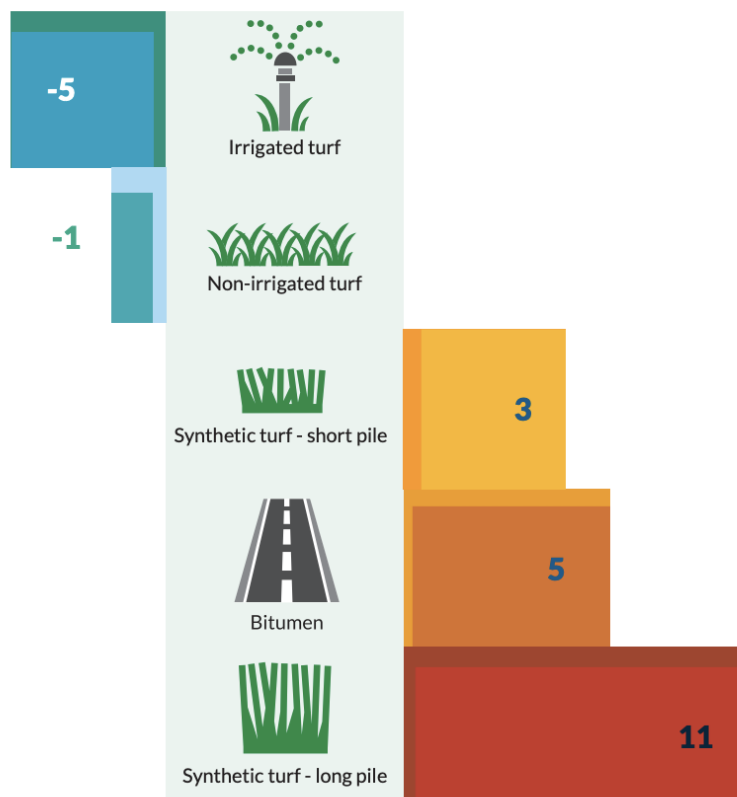
The public understanding of synthetic fields has come a long way in the last couple of years. There are more negative newspaper articles, more stories on urban heat, increases of microplastics in our environment, need for clean air, more trees and more debates about how synthetic fields are taking away green open space from locals as they can't be easily shared (natural grass need not be fenced and is therefore more welcoming to residents).

Women's World Cup 2023, players have requested that all games and training facilities are natural turf due to their opposition to synthetic fields and the concerns that were prevalent from previous competitions. The players undertook legal action before the 2015 World Cup in Canada due to safety concerns and inequality.

Coupled with this is the bacterial issues relevant and the need for fields to be sprayed with bacterial and anti fungal sprays to address the health and safety of the players. Synthetic turf fields are maintained with additional toxins such as chemical disinfectants and flame-retardants.

Lastly, research and documentation with regards to head impacts and brain injuries is very limited. See, Government of Western Australia, Department of Local Government, Sport and Cultural Industries, Natural Grass vs Synthetic Turf Study Report, 8 July 2019, attached below. Pages 49-56

Warming and cooling in degrees celsius of surface temperature



Full details of the research will be made available at www.horticulture.com.au/turf

Toxicology and Ecological impacts- Data Not Available - Crumb Rubber Granulate - SBR - 3G - Intentional infill

In May 2021, ECHA published a [follow-up study](#) on substances (other than PAHs) in plastic and rubber granules and mulches used as infill on artificial pitches. It identified over 300 chemicals that could potentially be found in the infill material and created criteria to prioritise those that potentially pose the greatest concern.

In the US over half the chemicals had not been tested by the government, and those that had some government testing contained PFAS and PCBs, highly toxic chemicals that can irritate skin, eyes and lungs. As the fields get used, the crumb rubber breaks down and releases a toxic chemical dust cocktail that is easily inhaled into the deepest sections of our lungs. America meanwhile has artificial Turf Lawsuit as toxic compounds have been linked to cancer.

The effects of synthetic fields on sports participants is untested and unknown in Australian conditions as indicated in reports. Also, concerns are evident with regards to the materials used, in both turf layer and rubber infill, and the health impacts due to the chemicals used and emitted by the field overtime, off-gassing.

Based on this, ECHA recommended that further assessments should be carried out on certain chemicals that could be harmful to people or the environment. These chemicals are:

- Cobalt and zinc- with potential risk to people's health; and
- Cadmium, cobalt, copper, lead, zinc, 4-tert-octylphenol, 4,4'-isopropylidene diphenol (BPA), bis(2-ethylhexyl)phthalate (DEHP), benzyl butyl phthalate (BBP) and benzothiazole-2-thiol – with potential risk to the environment

The Safety Data Sheet, provided by Genan Ltd.; a company that specialise in recycled end of life tyres, that relates to the Genan Rubber Granulate product range and covers the numerous variations of granulate manufactured by this company, from Genan Fine™ through to Genan Mega Coarse™.

This product is currently being utilised within the construction of numerous synthetic sporting fields, recreational areas, educational facilities and early childcare centres and a vast quantities of it are required. Depending on the size of the field installed, required up to 20,000kg of microplastic crumb rubber granulate to be used.

There are numerous concerns with regards to the safety, ecological and toxicological data that has NOT been provided with this product and as stated within the Genan Ltd. Safety Data Sheet clearly indicates that "Data not available". Lawsuits in America alleged that the companies failed to warn customers of the potentially dangerous toxins that their products contained.

The U.S. House on the 21/07/2021 passed the PFAS Action Act of 2021, a bill that, if passed by the U.S. Senate, would improve the regulation and facilitate the cleanup of per- and polyfluoroalkyl substances—long-lasting synthetic chemicals that pose a threat to public and environmental health. Australia is lacking any PFAS action plan.

Imports of PCBs to Australia have been banned since 1986. How come we are allowing PCBs are imported in the form of synthetic grass/ infill? See study which showed increase in PCB soil levels around synthetic soccer fields.

ECHA states that “The granules and mulches may contain potentially harmful chemicals including polycyclic aromatic hydrocarbons (PAHs), metals and phthalates. They may also release volatile and semi-volatile organic hydrocarbons (VOCs and SVOCs). The granules also contribute to microplastic pollution as they can be spread to the environment from the pitches”

The European commission is introducing stricter limits for eight compounds found in rubber granules and mulches used as infill in artificial sports pitches and playgrounds. The concern is that these materials expose people to harmful chemicals and that they pose a cancer risk.

‘It is a little odd to read their assessment saying that we’ve got eight chemicals that we will have much tougher standards on than before, which indicates that the risk assessments weren’t adequate,’ says public health researcher Andrew Watterson at the University of Stirling, UK, who has written about artificial turf. ‘And that there’s 300 odd other chemicals and many mixtures that we haven’t looked at and we are going to have to prioritise some of these.’ This includes various endocrine disruptors and heavy metals.

Given the existing concerns with crumb rubber granulate, re the impacts to human health, safety and the environment and now product safety, accreditation and certification, with regards to heat impacts and extreme surface temperatures, it is alarming that this is the level of information, or more importantly lack thereof, that exists or is provided.

No Australian Standards - No Accredited Testing - Issues Product Safety - Toddlers Receive 2nd Degree burns.

Indicated by Standards Australia and mentioned within other documentation, Victorian and Western Government reports, there exists no Australian Standards for synthetic turf fields. Given the weather extremes experienced within Australia, that are not represented elsewhere; namely Europe and British climates where existing standards are utilised, there is no account for the high surface temperatures being recorded upon synthetic fields.

Sebastian Pfautsch, Western Sydney University, Associate Professor in Urban Management and Planning, Geography, Tourism & Planning, whose research is being used by the DPIE, has recorded surface temperature in excess of 100°C Celsius, hotter than boiling water. This had led to many instances whereby young children, principally toddlers, have experienced severe burns, 2nd degree, to their feet when coming into contact with these synthetic surfaces.

Given that Governmental grants are being utilised by Local Government Areas, sporting groups, educational institutions and other parties to install synthetic turf fields into community open spaces and parklands this is extremely concerning.

Questions regarding mitigation of environmental issues specific to synthetic. We request these questions are put to the various government agencies for a response. Councils are relying on the brochures of the synthetic manufacturers for answers.

1. The European Chemical Agency states that the PCBs from synthetic pitches in residential areas are above the soil limits for residential classification in the Netherlands. Who will monitor this in Australia? Should we allow this to occur without any research?
2. Water Pollution - Who will measure and reinforce that there is no contamination of groundwater and stormwater discharge from toxic microplastics of synthetic fields? What are the protocols required in relation to synthetic soccer fields to prevent microplastics entering waterways ?
3. Disinfecting - Chemical Pollution: What list of approved disinfectants are to be used to wash synthetic fields to ensure community health is not compromised and waterways are not impacted?
4. Chemical exposure through toxic air pollution and proximity to residential homes. How can it be ensured that residents' health will not be impacted by the implementation of the synthetic soccer field so close to houses and what tools and protocols are in place to measure air quality and the discharge of toxic components into the air and into the ground?
5. Toxic Landfill Waste - What are the guidelines for the safe mechanism of disposal of synthetic turf at the end of its useful life which prevents further discharge of its toxic contents into the environment?



Source - Zembla - The Netherlands

6. Who can oversee and reinforce that the National Environment Protection Measure and the Australian & New Zealand Guidelines for fresh and marine water quality frameworks are met and include specifications around microplastics and PFAS toxics from synthetic soccer fields and ensure that local councils are following their duty of care to protect residents and our waterways from the risks such as exposure from PFAS microplastics?

Future challenges

[European Chemical Agency](#) declares crumbed rubber cannot be mitigated through containment and with this opinion it is working towards a timeline whereby in six years the fields with rubber infill will be banned.

The NSW government has committed to **ban single-use plastic** bags, plastic straws, stirrers, cutlery, expanded polystyrene food service items, plastic cotton bud sticks, and microbeads in cosmetics but has not addressed the use of microplastics in synthetic soccer fields in their NSW Plastic Action Plan released in June 2021.

All PFAS require a ban in Australia to protect our drinking water and health. It has become apparent to the NSW EPA that there are many areas relating to synthetic turf fields that have not been addressed within current literature and of particular importance is the impact of the **Australian environment and climate impacts that are not documented.**

2.2 List of Experts

1. Dr Greg Dingle. Sports Management. La Trobe University
He can also refer you to exercise physiologists who specialise in synthetic injuries.
2. Dr Mick Battam, Soil and Irrigation Scientist
3. Dr Paul Lamble, Geospatial Science
4. Associate Professional Sebastian Pfautsch. Associate Professor - Research Theme Fellow - Environmental Sustainability
5. Professor Ollie Jay. Professor of Heat and Health USYD
6. Dr Scott Wilson, Ecotoxicology (microplastics)
7. Dr Mark Siebentritt, Hort Innovation, Lead Researcher - article '[conveying the benefits of living turf - mitigating the effects of the urban heat island](#)' - this is one of the few longitudinal studies of heat in Australia.

2.4 Current Environment in Bayside

1. One of the lowest tree canopies
2. High Urban heat island effect

“Greening our Cities”: Bayside Council, like many others, has sporadic tree planting programs. They are led by the DPIE with reports, quotas, and actions to improve green spaces.

'Tree Canopy': Bayside Council is yet to prepare a **full environment plan** covering tree canopy, urban heat island, bio-diversity and the full effect of climate change. Elements of these issues are referred to within Bayside Council's website with no single vision or goal.

2.4 Smart Connections

The leading consultant on synthetic fields is Martin Sheppard. 80% of synthetic fields have been installed as a result of Martin's advice. His documentation from 2015 has expanded to advise councils to consider issues such as sustainability, flooding, recycling, site consideration and compliance. Although these issues go into depth and refer to scientific studies, most of the issues are for future consideration and future innovation.

3. Social Impact

It appears that no **Social Impact Assessment** has been undertaken by council before the Gardiner Park synthetic project implementation. FoGP commissioned a Social Planning consultant. The assessment concludes that the installation of synthetic fields:

"..have the potential to generate a significant number of social impacts for residents. From a social impact perspective, it appears that in this instance, the identified negative impacts generated by the proposal are more significant than the minor potential social benefits generated by the proposal, and as such, the proposed amendments to Gardiners Park should be reconsidered to minimise the social impacts for residents and the wider community." Issues identified are:

- **Overlooking/loss of privacy**: With the installation of a 1.2 meter raised synthetic soccer field, it does not appear that the significant loss of privacy has been considered in the planning and design of the synthetic soccer field, nor has any consideration been made to how this may impact on residents of affected dwellings including how they live their lives within their own homes.
- **No improvement of access/accessibility of park**: The proposal does not upgrade the access routes through the park, therefore there are no positive gains to the wider community in terms of improved access. As such, the overall development does not appear to be providing social benefit to the wider community. Only one section of the community, a soccer club, benefits from the project.
- **Acoustics and Noise**: It does not appear that any noise or acoustic assessment has been undertaken to determine the noise generation levels associated with the use of the synthetic soccer field. Synthetic surfaces don't absorb the noise as well as natural grass. In addition, the increase in height proposed to facilitate the construction of the synthetic field, as well as the increase in hard surfaces, and the potential for an increased volume of people utilising the field, has not been addressed in relation to an increase in noise.

- **Traffic and parking related amenity issues:** No consideration appears to have been made regarding the traffic and parking implications and the impacts this will have on residents who will be impeded in leaving and returning to their homes, and in finding parking when the field is in use. Families with babies or young children will not be able to park near their homes, generating safety issues with getting children out of and into vehicles and managing road safety.
-
- **Equity:** The implementation of synthetic is in opposition to the principle of equity, which in this instance, changes a natural and open public park, to a park dominated by a synthetic field for the single use of one sport. The money spent on the installation of the synthetic soccer field, and the potential social and environmental impacts generated by it, could have been spent on upgrading park access and facilities for the benefit of the whole community, without the ongoing costs that the synthetic field will generate, likely paid for by residents in rates.
- **Visual impact:** The visual impact for residents who have clear and uninterrupted views of the park from their homes and backyards, will now have this view interrupted by fencing.



IMAGE TAKEN FROM THE SOUTH OF PARK



VIEWS TO THE NORTHWEST WILL BE DOMINATED BY FENCES AND SYNTHETIC FIELD. NOTE THAT SKETCH IS DONE AT EXISTING GROUND LEVEL. IF THE GROUND LEVEL IS RAISED 1000-1200mm THE FIELD WOULD DOMINATE FURTHER FROM THIS ANGLE AND THE VIEW WOULD BE OBLITERATED.

GARDINER PARK BANKSIA

LOSS OF NATURAL BEAUTY AND VIEWS

-
- **Crime and safety:** No assessment of the potential for increased crime appears to have been undertaken. There is potential for crime rates to be negatively impacted by the installation of the synthetic soccer field. Improving surveillance from surrounding areas to the park has not been considered.
- **Minimizing access control:** The proposed changes to Gardiner Park impede existing access pathways through the park, closing off previous access points. The

blocking of established pathways can create opportunities for people to become trapped or cornered within the park. The proposed playing field development adds fencing and a new locked gate to facilitate ambulance access, effectively enclosing the playing field area, rather than opening access to enable free movement throughout the space

- **Territorial reinforcement and space management:** The proposed redevelopment of Gardiner Park contributes to a sense of territorial reinforcement in terms of the use of the synthetic soccer field for a specific football club. The intent of this principle is not to create private spaces within public open space as is the case with the proposal. There is no coherent or detailed Plan of Management for the synthetic space, including detail of how use will be managed; costs associated with use of the spaces etc
- **Public interest:** The development results in a number of negative impacts that outweigh any potential positive impacts generated by the proposal. The potentially negative impacts outweigh any potential public interest benefit. Overall, the proposal is not in the public interest as it does not result in benefit to the wider community.



Peaceful protest at Gardiner Park by residents - November 2020

A current petition by the Natural Turf Alliance on [Change.org](https://www.change.org) has over 1,500 signatures. These issues are of concern to people in Sydney and Melbourne. See attached Submissions to Inner West Council for Arlington Oval, Dulwich Hill and Middle Head Oval at Mosman. (google drive)

We are being asked by other campaigns for help and advise, and have received help from:

1. Barra Brui at St Ives (Council defeated)
2. Bob Campbell at Greenwich
3. Mimosa Oval at Turramurra
4. Miller Reserve, Manly Vale
5. Gladesville Reserve
6. Callan Park at Rozelle
7. Tempe Reserve
8. Turruwul Park, Rosebery
9. Poulton Park, South Hurstville
10. And in Victoria, Hoskens Reserve

This is a growing social and environmental movement, as residents are very sensitive about their parks being synthesized.

DON'T PUT SYNTHETIC TURF ON SYDNEY'S OVALS




 Natural Turf Alliance started this petition to [Rob Stokes \(NSW Minister for Planning and Public Spaces\)](#)

DON'T install synthetic turf on ovals that is HOTTER THAN BITUMEN in summer.

1,514 have signed. Let's get to 2,500!



 Ruben Welschen signed 18 hours ago

 Lian Gallacher signed 19 hours ago

Thanks to your support this petition has a chance at winning! We only need 972 more signatures to reach the next goal - can you help?

[Take the next step!](#)

<https://www.change.org/p/no-synthetic-turf> - June 2021

4. Economic

Long term financial implications for both LGA councils and user groups exist with the installation of synthetic turf fields.

- **Whole of life** - From installation to maintenance, replacement and the establishment of sinking funds, Bayside Council is not able to fund the whole of life costs without commercialisation or future grant opportunities.
- **Sinking funds** - There are no adequate provisions for sinking funds. For example, Ilinden's response to Bayside (SRC Meeting 24 Feb 2020), notes that the club is able to contribute 14% to the sinking funds. This means the club is subsidised by Bayside Council by 86% for the field, maintenance and ongoing.

Bayside Council commissioned an independent auditor who valued the market rent at \$78k p/a in 2020. The club challenged this cost and Bayside sought to establish a sinking fund regime. (SRC Meeting 24 Feb 2020)

The remaining clubs (of which there are at least 5) and their use of the synthetic fields is now set against this benchmark of 14%.

- **Commercialisation** - The meeting considered how each field could stand alone and be self funded (SRC Meeting 24 Feb 2021)
Debra Dawson, Director of City Life at Bayside Council states "Given the costings evident this appears not to be possible"
Scott Field, Manager of Sport and Recreation said "(there is a) Possibility of conflict between the competing principles of commercialising facilities that were intended for community use"
Councillor James MacDonald said "What opportunities exist for monetising the summer season by partnering with commercial operators? "
- **Budget implications for Bayside** - Bayside Council has a funding gap or shortfall to the [tune of \\$124 million](#) over the next 10 years, according to their quarterly report. This could be \$231 million if Council is unable to fund the current backlog.

- **NSW Treasury.** [Updated advice](#)

NSW treasury recommends that, where a business case can demonstrate that there are sufficient funds available to ensure that an asset can be operated, maintained and eventually disposed of, then there would be a good case for supporting the decision to proceed with the change. Where only capital funding is available the decision should be rejected.

When we talk about synthetic playing fields the value that the asset provides is to provide a sporting facility for the use of sports clubs using it, generally in a wider range of weather conditions than a traditional grass field.

Where an existing dedicated sporting facility exists the change to a synthetic surface may increase the value by allowing the field to be used over a greater span of time. However this must be balanced by the TotEx costs and a business case proposition such as charging for access may cover these costs. As noted, for a dedicated well managed sporting facility the business case may well support this.

In the example of Gardiner Park however, Bayside Council are converting a publicly accessible grass park to a synthetic field, this will be fenced off and will not be available for the local community. While this may add some value to the local soccer club who will have exclusive use of the facility, it significantly reduces the amenity value to the local residents.

The capital funding for the Gardiner Park synthetic field came in part from a NSW Government, although we understand the council has had to use their own funds in addition to this to cover unexpected costs.

The council went ahead with the development without any consideration to how the operational and maintenance costs for the field would be covered. This decision was clearly based on the opportunity to access NSW government funds while they were available, planning processes were circumvented and no whole of life decisions were made. Indeed we believe at a recent council meeting that it was identified that there were no funds available in future budgets to maintain the Gardiner Park synthetic pitch and many others throughout the council area.

The consideration of value that the asset provides was not undertaken in the decision making process, in particular with the negative impacts on the local community not being considered.

The decision to proceed is based on access to third party capital funds without any consideration to whole of life costs. This does not meet NSW Treasury Policy.

With no access to maintenance funds we fear that in the not too distant future this asset will become yet another dilapidated and unusable facility that has added a burden to the local residents and taxpayers while at the same time significantly impacting their ability to access the amenity value of this heritage listed park in an otherwise dense residential area.

5. Solution

There are several ways to solve this growing problem. Consider the entire LGA in funding decisions, not park by park funding.

Audit assets, not just the parks but the neglected spaces (brownfield sites) to advise on the opportunities to improve the overall LGA, not take away from the open space because **without regulations, special criteria or legislation Councils, with funding, will continue to please the soccer or sporting groups over residential or environmental groups on the placement and construction of synthetic fields.**

Grants should have rigid criteria

- Grants for synthetic should be done as a fully costed model and cannot be left for Councils to decide.
- From start to finish and covering a 10 year life cycle with ROI included.
- Synthetic fields in sporting precincts with adequate parking
- Synthetic fields are for taking the load off grass parks, not converting all parks to grass

Location

- Located in an area that is otherwise not heritage,
- more than 50 metres from houses (unknown heat island effect on cooling)
- not in a floodway or floodplain (added expenses)
- NSROC was looking for brownfield sites, where the capping of the land is an improvement.

Maintenance

The majority of complaints stem from lack of maintenance and irrigation. By improving turf and soil knowledge (refer to list of experts - Dr Mick Battam and Dr Paul Lambie) soil and grass can be improved year after year. We liken this to a new car. A synthetic field, once built, starts to depreciate the moment it is played on, whereas a grass park improves year upon year.

6. Questions on Notice

Further questions:

1. Can the Bayside Council ensure that synthetic turf fields are safe for children who are pre literate or illiterate adults, given they will not be able to read warning signs (if positioned) and will therefore not understand that a green-surface in a park can be as hot as 106deg (ref Cool Schools - UWS)
2. SBR rubber crumb is known to cling to player's skin, hair and clothing which can lead

to the potential inhaling or contact with harmful chemicals. What has Bayside Council provided or established to ensure those with allergies, including for latex and asthma, playing on synthetic fields are safe.

3. Synthetic turf can create an urban heat island phenomenon, unlike natural turf. Western Sydney University found a synthetic turf that reached 106° Celsius western Sydney during a heatwave in January 2020. What protocols or steps relevant to duty of care has the Bayside Council instilled in those supervising these fields to ensure the safety of users and the general public?

4. It is known that a person's UV exposure can double on surfaces such as fresh snow that has a high albedo (reflection). In a country with the highest melanoma rates in the world, has the Bayside Council considered the albedo properties of synthetic turf and the possibility for increased harmful UV exposure whilst utilising these surfaces? If so, what evidence has been considered?

Ref - <https://journals.ametsoc.org/view/journals/apme/49/3/2009jamc2198.1.xml>

5. What studies, assessments or research have been undertaken or utilised by the Bayside Council with regards to reflected and refracted UVA and UVB levels on these playing surfaces?

6. Friction and rubber burns are a known consequence of sliding and falling with minimal velocity on these surfaces requiring medical treatment. How can the Bayside Council ensure and by what measures has the Bayside Council undertaken to provide the community surfaces that are safe, clean and free of animal contaminants, algae, bodily fluids, blood and other bacteria at the time of playing? Unlike natural turf these surfaces are impermeable and such contaminants can accumulate and propagate.

Ref: <https://www.safehealthyplayingfields.org/injuries-and-player-preference>

7. Has the Bayside Council considered the adequacy of these surfaces for sports which involve a higher degree of turf contact (sliding, tackling, diving) more readily played in Australia such as Rugby, Oz Tag, AFL and faster game variations of Cricket?

8. Has the Bayside Council considered the relative differences in surface impact and the risks for increased joint and body trauma, including concussion and as such can the Bayside Council provide the research and reporting utilised?

Ref: <https://journals.sagepub.com/doi/full/10.1177/0363546518808499>

9. Has Bayside Council considered the relative impacts of bioaccumulation of rubber particles in endemic and endangered, or at risk Australian fauna and if so, can Bayside Council provide the research documentation referenced? REF: <https://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/miljoarbete-i-sverige/egeringsupdrag/2016/mikroplaster/report-orebro-university-160405.pdf>

10. Athletes and children are playing on artificial turfs. However, the health risk

associated with exposure to SBR crumb rubber from artificial turfs is unknown for higher vertebrates. Is Bayside Council aware of studies on the effect of toxic leachate from crumbed rubber and the effect on the early development of subjected chicken embryos as an example of a higher invertebrate. This study triggers a scientific discussion as to whether crumb rubber is an appropriate infill material for artificial fields. Can Bayside Council assure pregnant women that contact with artificial turf fields with crumbed rubber are safe for a developing embryo?

Ref: <https://www.pnas.org/content/116/50/25156>

11. At the end of its life how does the waste byproduct of synthetic fields comply with the National Waste Policy Action plan which determines to ban the export of waste plastic, paper, glass and tyres, commencing in the second half of 2020? Can Bayside Council provide reference to the certification or accredited Waste Facilities utilised in the disposal of synthetic turf waste byproduct within Australia.

12. Many Local Government Areas have declared a climate emergency. How does the Bayside Council support and address the climate change challenges as identified by Local Government Areas and as indicated by LGA's, Australian Local Government Association, National Conference June 23-25 2021, needing to be front and centre in all decision making, especially in relation to SBR crumb rubber synthetic fields or surface upgrades within State Government funding grants and initiatives?

13. Synthetic turf as landfill will slowly degrade and break down into smaller plastic particles and microplastics. This will generate the powerful greenhouse gas emissions of methane and ethylene as the plastic degrades. (Royer et al August 2018). How does Bayside Council intend to manage and address the landfill or end of life byproduct of SBR crumb rubber synthetic fields?

Ref: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200574>

14. Can Bayside Council provide the guidelines and protocols established for the safe mechanism of the disposal of SBR crumb rubber synthetic turf and associated waste byproduct at the end of its useful life which prevents further discharge and increase of toxic contents into the environment?

Ref: <https://www.fairwarning.org/2019/12/fields-of-waste-artificial-turf-mess/>

15. Has Bayside Council considered the increase of risk of insurance claims from injured players and the liability concerns relevant to synthetic turf fields? There are already law firms specialising in injuries from synthetic turf and numerous incidences of legal action both within Australia and abroad.

16. Has Bayside Council investigated the potential increase in insurance costs and liabilities for grass-root clubs and user groups and their impacts to local clubs and associations? If so can Bayside Council provide the documentation utilised within these investigations as following on from examples from overseas it is expected that insurance costs will go up for Associations, Sporting Bodies and Local Clubs. (NFL, Football, Rugby Union, Baseball have experienced recent legal action by players and player associations)

17. Is Bayside Council aware that Tobias Mullers, European Marketing Manager, Polytan Asia Pacific, a leading provider of synthetic turf surface within Australia, is quoted as saying that SBR rubber crumb is not for European market, but is sold abroad (ie Australia) Given this, what reasoning or justification can Bayside Council provide as to why microplastics of a grade, principally SBR crumb rubber, no longer used in Europe still being used and sold to Local Government Areas utilising State Government funds in Australia?

<https://www.dw.com/en/possible-eu-ban-on-plastic-granules-has-amateur-football-clubs-in-an-uproar/a-49730305>

18. Most synthetic turf fields are constructed in flood zones or flood ways, increasing both capital costs and diverting water flows to other areas. Research shows water runoff from artificial turf is much higher than with living lawns, which could raise risk of flash flooding, scientists warn. Has Bayside Council considered the increased risk of flash flooding caused by the installation of impervious synthetic turf fields for urban areas and as such can Bayside Council provide the studies that have been used?

19. A chemical analysis study conducted by Yale University in 2015 found that 12 of the 96 chemicals found in rubber pellets were registered carcinogens (substances capable of causing cancer), and up to 48 other chemicals hadn't been tested by the government and that due to or subjected to high heat, synthetic fields release gases. What understanding and research can Bayside Council provide with relevance to the toxic contents and increased toxic off-gassing, caused by synthetic turf fields due to the extreme temperatures experienced within Australian climate, and their impact to user groups and surrounding residents?

20. What is the Bayside Councils strategy for mitigating urban heat in playgrounds, school play areas, open spaces and parklands where synthetic turf fields have been and are intended to be installed, that is contradictory to the Greater Sydney Commission, WSROC, Adapt NSW, Sydney Water, Low Carbon Living and numerous other peak bodies policies, guidelines, research and identified measures to mitigate the heat impacts of impervious surfaces and infrastructure projects.

21. ECHA recommends a ban of microplastics as intentional infill. Can the Bayside Council detail the research and investigations being undertaken within Australia re micro plastics and their infiltration and impacts into existing waterways, lagoons, wetlands, key fish habitats and other bodies of water utilised by invertebrates, crustaceans, shellfish, fish stocks and other sea life.

22. Can the Bayside Council provide the research and reporting utilised to install synthetic turf fields within the Australian climate given the impacts to marine life, aquatic bird life, edible fish stock and sea creatures consumed or consuming sea life, impacted by micro plastic litter or run off from synthetic turf fields.

Ref:<https://www.nespmarine.edu.au/document/microplastics-australian-marine-environment-issues-and-options> and

<https://www.nespmarine.edu.au/document/primary-microplastics-marine-environment-scale-issue-sources-pathways-and-current-policy>

23. What is Bayside Council's position in relation to minimising or preventing contamination of ground water and storm water discharge from microplastics of synthetic fields given ECHAs reasoning to ban intentional infill was due to mitigation measures failing to alleviate or rectify micro plastics pollution.

Ref: <https://echa.europa.eu/hot-topics/microplastics>

25. Can Bayside Council provide the relevant product data safety sheet/s and indicate the list of chemicals, substances or other similar products of approved disinfectants that are to be used to wash, clean or sterilise synthetic fields to ensure community health is not compromised and waterways, lagoons, wetlands and key fish habitats like Sydney Harbour and Botany Bay are not impacted?

26. Can Bayside Council provide an assurance that resident's health will not be impacted by the implementation of the SBR crumb rubber synthetic fields in close proximity to residential houses and what tools and protocols are in place to measure air quality and the discharge of toxic components into the air and into the ground to justify this assurance?

27. NSW law (Protection of the Environment Operations Act 1997: Regulations 2009) states that any matter (including plastics) which could cause a physical, biological or chemical change in the environment is a pollutant. Putting artificial turf containing toxic chemicals into open spaces and parklands is considered as a pollutant and cause issues for the environment in the future given the recognised migration of SBR crumb rubber infill from these fields. Thus, could Bayside Council please advise of the considerations of NSW Law, Protection of the Environment Operations Act 1997; in relation to SBR crumb rubber infill as a pollutant and what measures or regulations have been undertaken to ensure adherence?

28. What information does NSW Fair Trading hold on the product safety and heat data of SBR crumb rubber infill synthetic turf or artificial grass, or other similar such products, as detailed within Australian Consumer Laws, as used in childcare centres, local parks, schools, unit blocks or other public spaces.

29. Is Bayside Council, along with NSW Fair Trading, aware that the recorded heat of synthetic turf has reached over 106° Celsius in Sydney, and poses a definite safety risk to community members given the excessive heat and the requirement of those affected to seek medical attention for 2nd degree burns? As such what safety measures does Bayside Council have in place to ensure that these severe and permanent impacts to community members are negated?

30. Is Bayside Council aware of the harmful effects of radiant heat on synthetic fields affecting both the players, the spectators and the environment?

REF: <https://www.sciencedirect.com/science/article/abs/pii/S0169204616301992>

31. What are the protocols, guidelines and/or regulatory measures that Bayside Council intends to utilise in relation to SBR crumb rubber infill utilised within synthetic soccer fields to prevent microplastics entering waterways given ECHA cautioning and the failure of established mitigation measures to protect or alleviate the environmental impact?

32. Can Bayside Council provide clarification and justification for the installation of synthetic turf fields within open spaces and parklands given the Cooling Park Effect and the obvious negative impacts that the installation of synthetic turf fields within open space and parklands will create upon this effect.

33. Organic substances, harmful for aquatic environments and/or humans were detected in all leachates but in highest concentration from R-EPDM followed by EPDM. In the literature, risk assessments focused predominantly on RT while assessments of other infills were less extensive or were missing. It is stressed that there is a need to include all infill types in risk assessments. Has Bayside Council undertaken risk assessments conclusive to all current and proposed infill types and their impacts given the extreme heat and UV radiation impacts caused by the Australian climate.

REF: <https://portal.ct.gov/-/media/DEEP/artificialturf/DEPArtificialTurfReportpdf.pdf>

34. Synthetic fields enhance infection transmission risk and encourage a microbial community structure primarily defined by anthropic contamination. What mitigation and safety measures does Bayside Council have in place to combat this?

REF: <https://www.sciencedirect.com/science/article/pii/S2405844019359948>

Ref; <https://academic.oup.com/cid/article/39/10/1446/457519>

35. As indicated by the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) and the Australian & New Zealand Guidelines for fresh and marine water quality, regulations exist and need to be adhered to when implementing the installation of infrastructure projects such as synthetic SBR crumb rubber fields. These protection measures have clearly not been addressed and no safeguards are in place for Australia. Can Bayside Council please provide reasoning and justification for why guidelines established within NEPM are not being followed or considered within the installation of synthetic turf fields

REF: <https://www.waterquality.gov.au/anz-guidelines/framework>

36. Can Bayside Council please provide an explanation and reasoning for the provision of State Government Funding and the failures by the DPIE to ensure and follow NSW Treasury asset policy for long term financial management by Local Government Areas receiving such funding. For reference, Bayside Council as one particular LGA that failed to ensure Long Term Financial Planning was in place.

REF:

<https://www.treasury.nsw.gov.au/documents/tpp-19-07-nsw-asset-management-policy>

37. Can Bayside Council provide the current Australian Standards and Jas-Anz accreditation for SBR crumb rubber synthetic surfaces currently being installed within NSW Communities. Given the associated products utilised within the construction of SBR synthetic turf fields this would include the synthetic carpet, shock pad, drainage cell, SBR crumb rubber and any other products used within the construction.

38. Can Bayside Council please provide the relevant product safety guarantee for SBR crumb rubber synthetic surfaces and their associated products utilising the relevant Australian Standards, accredited testing facilities and certified testing bodies with relevance to the testing of heat impacts associated with SBR crumb rubber synthetic surfaces and other synthetic surfaces installed throughout community open spaces, parklands, childcare centres, schools children play areas and other area frequented by community members impacted by these products.

39. Polycyclic Aromatic Hydrocarbons (PAHs) are naturally occurring in coal, crude oil and gasoline and have been shown to be carcinogenic to humans. In Europe, there is a concerning gap in legal concentrations of PAHs in SBR rubber crumb compared to general products and children's toys. Children can spend many hours on the surface and have frequent contact with the granules, due to hand to mouth tendencies. The disparity in regulation in PAH concentrations is concerning children's health. Can Bayside Council provide the research or reporting utilised by the DPIE with reference to PAHs concentrations experienced with synthetic turf fields addressing the risks to young children and other user groups associated with synthetic turf.

40. Given Australia's propensity for bushfires and the use of local parks during such events by SES volunteers as safe zones, excavation points and meeting areas for locals impacted, the installation of synthetic fields, due to their ability to burn and melt at high temperatures and be impacted by falling embers, removes this safety zone from the community. Can Bayside Council please indicate the reasoning utilised for installing synthetic turf fields in areas prone to or impacted by bushfires given the role that open spaces and parkland play to communities impacted by bushfires.

Ref:

https://www.e3s-conferences.org/articles/e3sconf/abs/2018/20/e3sconf_infraeko2018_00038/e3sconf_infraeko2018_00038.html

41. Is Bayside Council aware that microplastics degrade to micro level size, becoming inhalable and digestible. Due to the exertion required when involved in exercise the particles are inhaled deeper into the lungs. Can Bayside Council advise if players with asthma, other lung issues or deficiencies and users of synthetic surfaces are exposed or made aware of the increased risk?

42. Contained within recent funding grants provided by the DPIE, Local Sport Grant

Program, Greater Cities Sport Facility Funds and The Greater Cities and Regional Sport Facility Fund to name but a few, 'building facilities/surfaces for increased longevity and use (synthetic upgrades)' are part of the eligible scope for funding. Can Bayside Council provide reasoning and justification for State Government funding being provided to surface upgrades given the environmental, health, safety and product concerns relevant to these products utilised to upgrade surfaces?

43. Is Bayside Council aware that there are no epidemiological studies on the prevalence of heat stress episodes associated with synthetic turf, compared with natural turf, being the elevated temperature in warm, sunny and humid temperatures such as those experienced in NSW. Reliance upon regional weather reporting or the wet bulb temperature does not provide a full picture of the threat of heat on synthetic athletic fields as recent studies have shown.

Ref: <https://www.tandfonline.com/doi/full/10.1080/02656736.2019.1605096>

44. Can the Bayside Council please detail how synthetic surfacing or artificial turf will be managed so as to properly and entirely mitigate '*human-induced global warming, limiting cumulative CO₂ emissions, reaching at least net zero CO₂ emissions, along with strong reductions in other greenhouse gas emissions*' (GHG) as stated within the IPCC Report, given the vast amounts of CO₂ and GHG emissions generated by synthetic surfacing and artificial turf.

45. Given that natural grass removes carbon dioxide, CO₂, from the atmosphere through photosynthesis and stores it as organic carbon in soil, making natural turf fields important 'carbon sinks.'^{*} Can Bayside Council please detail how the removal of natural turf fields and in their place or replacement the utilisation of synthetic surfacing or artificial turf will mitigate and limit cumulative CO₂ and GHG emissions as outlined and recommended within the IPCC Report.

^{*} (Meil, J and Bushi L, 2007. '*Estimating the Required Global Warming Offsets to Achieve a Carbon Neutral Synthetic Field Turf System Installation*'. Athena Institute, Merrickville, Ontario, Canada.)

46. Can the Bayside Council please outline the reasoning and justification for the installation of synthetic surfacing and artificial turf given the evidence provided of the impacts of CO₂ within the IPCC Report and in the knowledge that '*Lifetime CO₂*' is estimated at an average of five (5) tonnes of CO₂ per single (1) tonne of plastics. As such it imposes a massive "*untaxed externality upon society of at least \$1,000 per tonne or \$350 billion per year from carbon dioxide, health costs, collection costs, and ocean pollution...plastic is responsible for roughly twice as much carbon dioxide per tonne as oil.*" (Carbon Tracker 2020)

47. As indicated within the IPCC Report, "*Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in carbon dioxide (CO₂) and other greenhouse gas emissions occur in the coming decades,*" can the Bayside Council detail how the utilisation of synthetic surfacing and artificial turf within community Open Space and Parklands will assist in the 'deep reductions' in CO₂ and other GHG emissions?

49.. Can the Bayside Council outline the reasoning and/or justifications for the removal of natural turf and installation of synthetic surfacing or artificial turf that would increase the impacts of CO₂ and GHG emissions given the key finding of the IPCC Report indicates '*Under scenarios with increasing CO₂ emissions, the ocean and land carbon sinks are projected to be less effective at slowing the accumulation of CO₂ in the atmosphere*' and as such would increase impacts of CO₂ and GHG emissions and thus create further detrimental impacts due to Climate Change.

50. As stated within the IPCC Report, '*It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.*' Can the Bayside Council indicate why and provide reasoning for the utilisation of synthetic surfacing and artificial turf that are known to contribute to the Urban Heat Island effect (UHI), reduce the Park Cooling Effect (PCI) and negatively impact the Physiological Equivalent Temperature (PET) of Community Open Space and Parkland.

51. Given the findings of the IPCC Report and the realisation of synthetic surfacing and artificial turfs' vast generation of CO₂ and Greenhouse gas emissions, this alone would appear reason enough for not to proceed with the conversion from natural grass to synthetic turf within Community Open Spaces and Parkland. Can Bayside Council please provide reasoning and justification as to why the Climate Change impacts caused by synthetic turf, principally the vast generation of CO₂ and GHG emissions are failing to be addressed and rectified and in fact further increased by the continued installation of synthetic surfacing or artificial turf.

6 Summary

With an upcoming [European ban on crumbed rubber infill](#), the recent NSW Government announcement of a ban on single use plastics and the NSW EPA's concern on the lack of Australian based studies into the environmental effects, **we are seeking a pause on all new builds.**

If Minister Stokes can pause development in floodplains due to community safety we see no difference with synthetic fields with rubber infills and urban heat issues that cannot be mitigated.

Friends of Gardiner Park have looked at missed opportunities for Council to use their green parks to the fullest extent and our advice is to implement a high level maintenance program and develop apprenticeship skills. It is not too late. The Land and Environment Court has deemed the work at Gardiner Park to be reversible and that is what we are seeking.

The Sydney Morning Herald



Bayside Council has been criticised by residents for its plan to astroturf two neighbourhood parks, including Gardiner Park in Banksia. KATE GERAGHTY

SMH OCT 31, 2020

**Written by Friends of Gardiner Park
Banksia NSW 2216**

Web: savegardinerpark.wordpress.com

Facebook: www.facebook.com/gardinerpark

Land and Environment Court case - 2020/334247