NATURAL TURF ALLIANCE

Fertiliser, Water Quality and Sporting Fields: Separating Myth from Evidence

Concerns are sometimes raised that fertilisers used on natural turf sporting fields pollute creeks and rivers, contributing to algal blooms and poor water quality. While nutrients must be managed responsibly, modern turf management has evolved to minimise these risks. At the same time, growing scientific evidence shows synthetic turf introduces a very different and more persistent form of pollution through microplastics and other contaminants.

Why This Matters

Protecting Australia's waterways is an important responsibility for councils, sporting organisations and the wider community. As local governments consider whether to retain natural turf or install synthetic surfaces, environmental impacts are increasingly influencing decision-making.

One argument frequently advanced in favour of synthetic turf is that natural grass requires fertilisers which may wash into nearby creeks and rivers, causing nutrient pollution and algal blooms. This concern deserves careful consideration. However, it should also be considered in the context of modern turf management practices and the broader range of environmental impacts associated with different sporting surfaces.

The question is not whether fertilisers need to be managed responsibly—they do. Rather, it is whether replacing a living natural system with a large engineered plastic surface actually reduces environmental risk.

Independent research suggests the answer is far more complex. While nutrient losses from natural turf can be substantially reduced through recognised best-practice management, synthetic turf continuously sheds microplastics throughout its life. Unlike nutrients, these plastic particles persist in the environment for decades, accumulate in waterways and are extremely difficult to remove once released.

Good environmental planning should therefore compare the full environmental impacts of each option rather than focusing on a single issue in isolation.

1. The Evidence

Healthy natural turf depends on nutrients to maintain dense grass cover, recover from wear and provide safe playing conditions. Like all managed landscapes—including parks, golf courses, gardens and agriculture—sporting fields require responsible nutrient management.

Modern sports turf management bears little resemblance to historical fertiliser practices. Professional turf managers now use soil testing, carefully targeted application rates and slow-release fertilisers that deliver nutrients only when required.

Applications are timed to avoid heavy rainfall, reducing the likelihood of nutrients entering stormwater systems.

Importantly, healthy turf also provides environmental benefits that help protect water quality. Dense grass cover reduces soil erosion, slows stormwater runoff, increases rainfall infiltration and supports soil microorganisms that naturally cycle nutrients within the soil. These processes allow much of the applied fertiliser to be absorbed by the turf itself rather than leaving the site.

By contrast, synthetic turf does not perform these natural biological functions. Independent studies have demonstrated that synthetic fields release microplastic fibres, plastic fragments and infill particles through normal use, weathering, maintenance and rainfall. These materials have now been detected in Australian rivers, estuaries and coastal environments, prompting growing concern among environmental scientists and regulators.

The scientific evidence therefore presents two fundamentally different environmental risks. One involves nutrients that are part of natural ecological cycles and can be effectively managed through best practice. The other involves persistent plastic pollution that cannot naturally degrade and continues to accumulate in the environment.

2. Understanding the Issue

Claims that natural turf is a major source of water pollution often oversimplify a much more complex issue.

Nutrients such as nitrogen and phosphorus can contribute to poor water quality if excessive quantities enter waterways. However, this is largely a management issue rather than an inherent characteristic of natural turf. Similar nutrient risks exist across agriculture, public parks, residential gardens and urban landscapes, where responsible management has become standard practice.

Community sporting fields typically represent only a very small component of catchment-wide nutrient loads. Modern councils increasingly require nutrient management plans, environmentally responsible maintenance practices and ongoing monitoring to minimise any potential impacts.

Equally important is the role natural turf plays as a living filtration system. Healthy grass slows runoff, traps sediments and allows nutrients to be absorbed by plants and soil before they can reach downstream waterways. In many situations, well-maintained natural turf actually improves stormwater quality compared with hard or impermeable surfaces.

Synthetic turf presents a very different environmental profile. Rather than filtering stormwater, plastic fibres and infill materials are gradually transported by rainfall, wind and maintenance activities into surrounding drainage systems. Once these materials enter creeks and rivers they become part of the growing global problem of microplastic pollution.

The comparison should therefore not be between fertiliser and no pollution. It should be between two fundamentally different environmental systems—one that works with natural biological processes and another that introduces persistent manufactured plastics into the environment.

3. Impacts and Implications

Protecting Waterways

Maintaining healthy waterways requires councils to consider every potential source of pollution. Best-practice natural turf management reduces nutrient losses while helping stabilise soils, improve infiltration and protect stream health. These environmental services are provided continuously throughout the life of the sporting field.

Managing Environmental Risk

Where nutrient runoff is identified, practical solutions already exist. Councils can adjust fertiliser programs, improve drainage, establish vegetated buffer zones and adopt precision application techniques. These measures are well understood and have been successfully implemented across Australia for many years.

Microplastic pollution presents a much greater challenge. Every synthetic sporting field gradually sheds plastic particles through normal use and weathering. Once released, these particles are extremely difficult to recover and may remain in aquatic environments for many decades.

Long-Term Sustainability

Natural turf forms part of a living ecosystem that continually renews itself through biological processes. Healthy soils recycle nutrients, support biodiversity and improve resilience over time.

Synthetic turf follows a different lifecycle. As plastic fibres age they become brittle and fragment into progressively smaller particles that are transported into surrounding environments. This process continues throughout the life of the surface and contributes to the increasing accumulation of microplastics in waterways.

Better Environmental Decision-Making

Responsible environmental planning considers not only whether pollution may occur, but also whether that pollution can be effectively prevented, managed or reversed.

Nutrient management is supported by decades of scientific research and established best practice. Persistent plastic pollution remains an emerging global environmental challenge with no practical method of recovering particles once they have entered natural ecosystems.

4. Best Practice Approach

Modern sporting field management recognises that environmental sustainability depends on good design, good maintenance and evidence-based decision-making.

Best practice natural turf management includes soil testing, targeted fertiliser programs, slow-release nutrient products, careful timing of applications and ongoing monitoring of turf health.

These practices allow councils to maintain high-quality playing surfaces while protecting surrounding waterways.

Good planning also considers the broader environmental services provided by natural turf. Living grass filters stormwater, cools surrounding neighbourhoods, supports biodiversity and contributes to healthier urban landscapes.

Rather than replacing these natural functions with engineered plastic surfaces, many councils are investing in improved drainage, irrigation and maintenance practices that increase the carrying capacity and durability of natural turf while preserving its environmental benefits.

The most sustainable approach is not to eliminate fertiliser altogether, but to apply recognised best-practice management while avoiding the introduction of new and persistent sources of plastic pollution.

5. Recommendations

1. **Assess** all environmental impacts using independent scientific evidence rather than focusing on a single issue.

2. **Adopt** best-practice nutrient management to minimise fertiliser runoff and protect local waterways.

3. **Recognise** the environmental services provided by healthy natural turf, including filtration, cooling and erosion control.

4. **Evaluate** the long-term implications of microplastic pollution alongside any potential nutrient risks.

5. **Support** best-practice natural turf management as the most balanced and sustainable solution for community sporting fields.

Key Takeaways

Healthy turf protects
Well-managed natural turf helps filter stormwater, reduce erosion and protect water quality.

Nutrients are manageable
Modern turf management uses proven practices to minimise nutrient losses and environmental impacts.

Plastics persist
Microplastics released from synthetic turf remain in the environment long after they enter waterways.

Compare all impacts
Environmental decisions should assess the full range of pollution risks, not just fertiliser use.

Natural systems work

Best-practice natural turf provides high-quality sporting surfaces while supporting healthier ecosystems and more resilient communities.

"Good environmental stewardship requires councils to consider the full environmental footprint of sporting fields. While nutrient management is a well-established science with proven mitigation measures, persistent microplastic pollution presents an emerging challenge that should be carefully considered when selecting future playing surfaces."

References

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This Fact Sheet has been developed with the support of Lawn Solutions Australia, the nation's largest network of turf specialists.
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Natural Turf Alliance Inc (NTA) is a Registered Association consisting of community groups committed to preserving and developing natural grass open spaces including sporting fields.
Our core focus is engaging with local councils and sporting groups in relation to best practice natural turf construction and maintenance.