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RE: Submission: Consideration of passive irrigation and other water sensitive solutions for the Macquarie Point Multipurpose Stadium

Background

The proposal to build the Macquarie Point Multipurpose Stadium in Hobart is a central component of the state's bid to secure a Tasmanian team in the Australian Football League (AFL). The stadium is planned as a 23,000-seat roofed facility located at Macquarie Point in Hobart. It is designed to host AFL games and a wide range of other events, including concerts and community gatherings. Key elements of the proposal include its integration into the broader Macquarie Point urban renewal project, aiming to catalyse economic development, tourism, and job creation.

The draft report suggests the proposed stadium development will include a significant area of impervious surfaces (of up to 58,500m²), due mainly to the fully enclosed, translucent roof. It also suggests that the existing stormwater infrastructure 'should' be able to manage the additional load, despite acknowledging that water quality targets are likely not achievable and any excess runoff will likely be discharged to the Derwent estuary.

The issue

The proposed design approach underestimates the site's overall water management needs, particularly under changing climatic conditions. The closed roof design results in significant generation of rainwater/stormwater runoff volumes and implies complete reliance on imported water for surface irrigation of the playing surface. In addition, this traditional surface irrigation will likely result in increased humidity within the enclosed stadium.

Recommendation

Consider a self-watering turf system underpinned by wicking bed technology for the proposed stadium development, including both the playing surface and the surrounding landscaping features. This design approach results in superior turf quality with little to no energy or potable water use. The self-watering system captures stormwater from the stadium roof and stores it below the turf in a shallow aquifer, so the turf can draw water up as and when needed,

delivering optimal soil moisture conditions to the root zone. This approach minimizing evaporation loss and reducing reliance on potable water.

Wicking bed technology addresses both stormwater management (volume and quality), and irrigation effectiveness. It reduces irrigation system complexity and eliminates the need for traditional surface irrigation techniques, which are less efficient due to evaporative losses and may lead to increased humidity within the enclosed stadium environment.

Subsurface wicking beds have been shown to produce turf, which is healthier, more resilient and of consistent/even colour. They have lower lifecycle costs compared to traditional stormwater management and irrigation. The technology has been successfully integrated with sports field design and soil profile best practice to ensure they function well in all climates, conditions and applications. They also offer significant water savings by using alternative water sources and efficiency gains when compared to tradition surface irrigation, as well as other benefits including improved stormwater management (quality and quantity).

Benefits to Macquarie Point Multipurpose Stadium

- Reduces stormwater runoff volume, alleviating pressure on the stormwater infrastructure
- Reduces pollutant loads discharged to the Derwent estuary
- Significantly reduces potable water use
- Reduces energy use (gravity fed not pumped)
- Reduces humidity potential within enclosed stadium
- Reduces maintenance and life cycle costs
- Provides safe and reliable turf irrigation

Alignment with Sustainability Frameworks

- ✓ Green Star – Communities & Design
- ✓ WSUD principles
- ✓ UN SDG 11: Sustainable Cities and Communities

More information: [Designing for a Cool City, CRC for Water Sensitive Cities \(2020\)](#)

Applied examples

1. [National Cricket Campus, Brisbane](#) – constructed a full-scale wicking/perched water table system for the Alan Border cricket field in 2022.
2. [Gladstone East Shores Parkland, Gladstone](#) – constructed a kick-n-play field in 2014.
3. [Innovation House 2.0, Townsville](#) – constructed a residential lot scale turf wicking bed in 2018.
4. [E2Designlab](#) have also undertaken several concept and detailed designs for multiple AFL and soccer fields Logan (Qld) and Campbelltown (NSW) City Councils.

[E2Designlab](#) is a specialist environment and water management consultancy based in Australia that combines urban design, landscape architecture, engineering, and environmental science to deliver integrated water management and climate-adaptive solutions. Their core capabilities include the planning and design of water-sensitive urban infrastructure, green-blue networks, and precinct-scale water strategies that enhance liveability and resilience in cities. They are known for their collaborative and interdisciplinary approach, helping clients co-design innovative solutions that align with sustainability, urban cooling, and community wellbeing goals.

Contacts

Sally Boer: Director, E2Designlab

[REDACTED]

[REDACTED]

Chris Manning: Principal, Urban Water Advisory

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[REDACTED]