

Shellharbour City Council

Business Paper

30 May 2023

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Synthetic Sports Surfaces Study



Synthetic Sports Surfaces Study

Exploring Sites and Technology to Meet Future Community Needs of Shellharbour City

Prepared for:



Prepared by: Martin Sheppard 13th February 2023





Acknowledgements

Acknowledgements of Country

This Study recognises the Wodi Wodi and Dharawal people as the Traditional Owners of the land which is now known as Shellharbour local government area. The Authors of this Study pay their respects to the Wodi Wodi elders, past present and emerging, and to all Aboringinal and Torres Strait Islander people who now reside within this area.

Purpose of the Report

Shellharbour City Council, as part of its continued commitment to promoting a more active city, continues to invest in the local community sports and recreation infrastructure as part of its Open Space and Recreation Strategy. This Study has been developed as part of a response to a Councillor Resolution (June 2022).

The information contained within this report is intended for specific use within and by Council and may not be used by any other organisation or for any other project without the permission of Smart Connection Consultancy.

Assumptions

All recommendations and considerations identified by Smart Connection Consultancy are based on data and information provided by Council, its key stakeholders and Smart Connection Consultancy has relied on such information being correct at the time this report was prepared.

The information within this report is provided with good faith. Whilst Smart Connection Consultancy has applied its experience to this report development, we have relied upon information and views expressed by Council officers and others.

Readers should be aware that in the preparation of this report it has been necessary to provide commentary on future projections that may be inherently uncertain, and that our opinion is based on the underlying assumptions at this point in time – which has been influenced by the information provided in good faith.

We do not express an opinion as to whether actual results will achieve our estimates, or underwrite or guarantee the achievability of the projections or value assumptions which are based on future events.

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Section 1: Introduction to the Study and Methodology

Smart Connection Consultancy is a specialist consultancy that aligns strategic outcomes with sports field surfaces technologies to create sustainable community outcomes.



This Synthetic Sports Surfaces Study has been prepared in response to the Council resolution and has highlighted further considerations for embracing synthetic sports surfaces technology across the City.

1. Introduction to the Study and Methodology

1.1. Study Objective

To identify potential locations and estimated costs for the provision of an all-weather synthetic sportsfields and their associated infrastructure within the Shellharbour local government area. This study should investigate the provision of new facilities and retrofitting existing facilities, with a business case for both. (*Council Resolution 7 June 2022*)

2.2.1 Strategic Focus

The Strategic Focus has embraced the Open Space & Recreation (OSR) principles with Council's overall strategy to ensure alignment. The mission (purpose) of embracing the synthetic sports surface technology is to:

"Provide sustainable surface options that encourage more people to be active, to play and recreate and participate in community sport, in a manner that supports natural surfaces, and can meet current and future demand."

Council is committed to delivering on this Strategic Focus by embracing synthetic sports surface technology in a manner that impacts on future planning, design, procurement, management and maintenance priorities and practices. Specifically how the technology will:

- Provide surfaces that will cope with the demand of greater participation in play, recreation and community sport
- Complement other natural turf fields allowing greater intensity of usage of the technology supported fields across the municipality, by reducing the negative impact to natural turf
- Ensure that the surfaces are designed and procured to meet the appropriate sports, environmental and safety standards

From this Strategic Focus the following strategic principles have been identified:

 People – To provide opportunities on Council land that through active recreation and community sport will increase the community health and wellbeing. The opportunities will ensure that there is accessible, equitably resourced sports fields across the City, which embrace a fully inclusive approach to usage with gender equality, reduced inequalities and cost not be a barrier to participation.

- Prosperity To ensure the investment provides best value for the community, when considering capital, maintenance and replacement costs together with options for secondary funding.
- Planet Embracing the technology should ensure that the development will create a better surface for the participants and the site, and impact positively on other sites in the neighbourhood, with benefits expected to water consumption and environmental sustainability.
- Leadership Council will explore innovative partnerships with all levels of government, community organisations, developers and schools to create more positive environments for the whole of community to participate in recreation and community sport.

This Strategic Focus allows Council to explore key places that could be more active with the embracement of the technology including:

- **Traditional sports facilities** using hybrid technology or full synthetic surfaces to allow for increased hours of use and increased intensity per field.
- New activity spaces converting current open space, within sporting hubs into synthetic sports surfaces for training, recreation and or competitive play.
- Community facilities encouraging more people to play locally in specifically designed 'Active Parks' such as 3 on 3 hard courts for football, netball, basketball etc.
- School and education Sites working with the local schools, Department of Education, Activation Section to open up schools and invest in the surfaces so that they can be used by the community outside of school hours
- Play and youth spaces to embrace surfaces that will encourage young people to play and recreate, the design and surface durability needed.



Photo 1: Make the World Better - Philly's First Basketball Court (https://www.mtwb.org/phillys-first-basketball-court-surface-murals/)

1.2. Introduction

Shellharbour City is in the Illawarra Region of New South Wales, and is about 100 kilometres south of Sydney. Shellharbour City Local Government Area (LGA) is home to around 76,443 people, and spans 147 square kilometres. Council's neighbours are Wollongong to the north, Kiama to the south and Wingecarribee to the west. Shellharbour is bounded by the Illawarra Escarpment in the west and South Pacific Ocean to the east.

Council's Open Space and Recreation Needs Study (OSRN Study) and Strategy (OSR Strategy), adopted in 2020 seeks to provide benefits to four key stakeholders – Community, Councillors, Customers and Council – to ensure Shellharbour's open spaces and recreational facilities are well planned for into the future.

The OSRN Study and OSR Strategy, identifies the current trends in organised sport and reflects the current demands and future sporting demands through extensive input from the local sporting community and data from state and federal sporting bodies.

A finding out of the OSRN Study was that while Council is meeting the demand of active fields, there is a growing need to investigate the provision of a synthetic field in the City to meet the expectations of the community, provide an all-weather playing surface with consideration to regional demand.

This finding is reflected in Action 2.2 of the OSR Strategy:

Conduct regular sportsground facilities' assessments, including usage and quality audits, to inform ongoing scheduling, capital works and maintenance (for example, pitch upgrades, fencing and lighting).

Public open spaces and recreation facilities support residents to have the opportunity to remain active, healthy, connected and relaxed across the Shellharbour LGA. The population are passionate and vocal about active recreation opportunities in the LGA.

The recent prolonged wet weather events have impacted the active open space network the condition of grass fields, field availability and impacts to organised sport seasons have prompted community and Council interest in the provision of all-weather, synthetic sports fields.

Within the City there are approximately 29 active recreation reserves representing close to 200ha in area. All active open spaces within the network are categorised as either district or city-wide. Within these 29 reserves there are a range of outdoor facilities that accommodate (among others): cricket, rugby union/league, football, AFL and athletics. To meet future demand, up to 6 new sports fields in total will be constructed at Calderwood Valley Development, Shell Cove, Benson Basin (Shellharbour City) and Myimbarr Community Park over the next 5 years.

1.3. Strategic Alignment

1.3.1. Overview

As part of the Synthetic Sports Field investigations, a strategic vision has been created that embraces a number of strategic frameworks. These frameworks align with Council's Community Strategic Plan and Quadruple Bottom Line being Community, Environment, Economy and Leadership. The United Nation's Sustainable Development Goals, and Council's Open Space Recreation Needs Study and Strategy have also been embraced.

The Strategic Focus has embraced the OSR principles with Councils overall strategy to ensure alignment. The mission (purpose) of embracing the synthetic sports surface technology is to:

"Provide sustainable surface options that encourage more people to be active, to play and recreate and participate in community sport, in a manner that supports natural surfaces, and can meet current and future demand."

1.3.2. United Nations Sustainable Development Goals

The UN SDG's are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice.

Utilisation of this sustainable framework will provide the best outcome for the community. See Attachment 1 for Strategic Alignment.

1.3.3. Council's Community Strategic Plan

The CSP reflects the community's vision for the future: we are a naturally balanced, vibrant and connected community. Through the CSP, Council works to achieve benefits for the quadruple bottom line being Community, Environment, Economy and Leadership. This Study is aligned with the QBL.

1.3.4. Council's Open Space Recreation Needs Study and Strategy

Shellharbour's Open Space & Recreation Strategy (OSR Strategy), is Council's guiding open space document, which supports the provision of environment to encourage people to be more active. By encouraging more people to be more active, more often, the playing surface needs to be sustainable to cope with the intensity of usage.

The OSR Strategy has identified key aspects that are impacting on the quality, provision and utilisation of sportsgrounds within the LGA, including:

- A growing population and increasing demand for sports and sporting infrastructure. Shellharbour LGA is approximately 149km² in size and is home to approximately 72,000 people
- Shellharbour is home to a high number of young people and families. 33% of the population are under 25, with many living in new release areas of Shell Cove, Finders, Tullimbar and Calderwood
- By 2031 over 60's are expected to be 30% of the population
- Anticipating a 16% rise in population by 2031 (approximately 14,000 people) means that infrastructure needs to be planned now for their arrival

1.4. Assessment Methodology

The methodology used to investigate synthetic surfaces was broken up into three stages; preliminary assessment of potential sites, knowledge sharing workshop and detailed site assessments.

1.4.1. Stages

Stage 1: Preliminary Assessment

In June 2022, an internal working group was created, consisting of Council staff who are directly involved with the planning and operations of active open spaces. The purpose of the working group was to identify sites to be considered for further investigation.

A scoping meeting was held on June 30 2022. With an initial assessment of the sports fields (Section 2) to allow a short-listing for this Study.

Stage 2: Knowledge Sharing Workshop

Smart Connection Consultancy was engaged in September 2022, to provide an objective overview of the technology and the various opportunities that could be considered in the future by Council, through a knowledge Sharing Workshop.

The Knowledge Sharing Workshop, held in October 2022 for staff involved in planning, operation and management of active open spaces addressed:

- Key opportunities, challenges and perceptions in regard to synthetic surface technology
- Standards performance, construction, environmental and technological solutions
- Design approaches and innovations
- Sustainability strategies and outcomes

The workshop provided participating staff with a deeper understanding of synthetic technologies and allowed for the project scope to be expanded.

A summary of the findings shared is documented in Section 3: A-Z of Synthetic Sports Surfaces Technology.

Stage 3: Short-listed Site Assessments

Short-listed site assessments were conducted by key staff and the consultant for the shortlisted sites identified in the preliminary assessment stage:

- Albion Oval, Albion Park Rail
- Croome Regional Sporting Complex, Croome
- Myimbarr Community Park, Shellharbour
- Shell Cove future sports field, Shell Cove
- Terry Reserve, Albion Reserve

Each site was assessed against a number of criteria that considered the strategic framework and quadruple bottom line. The findings of these assessments are summarised in Section 2: Site Assessments and Investigations.

Stage 4: Opportunities and Recommendations

From the short-listed site assessments the conclusions and recommendations were identified:

1.5. Conclusion and Recommendations

1.5.1. Conclusion

With the growing population over the next decade (+16%), together with specific growth in Football/Soccer, Council needs to consider how it can continue to accommodate the

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sports participation for additional sporting hours access. Balanced with embracing technology that can extend natural turf fields (e.g. hybrid turf in high-wear areas), conversion of natural turf fields to materially add an additional 2,000 hours per field or build new fields approximately with 3,000+ hours of synthetic.

There are a number of spaces that can be converted to synthetic turf fields, including Croome Regional Sporting Complex, Terry Reserve and Myimbarr Community Park.

1.5.2. Recommendation

- Albion Oval be identified as the priority sportsground to receive funding to redesign the facility and to an Active Precinct. By embracing the synthetic technology explored through the masterplan process for 2 synthetic fields (Football/Soccer, AFL, Cricket, Touch and Oz Tag); Expansion of the skate park with 3x3 courts to develop a small youth precinct and the creation of a jogging/walking track around the outside (granitic sand) of the field to activate the community, with exercise/fitness equipment appropriately placed.
- 2. Development of a longer term masterplan for Croome Regional Sporting Complex/Terry Reserve, to create an integrated and expanded hub that explores both active and passive leisure and community sports provision. The management of the whole site should also be reviewed so that the community perceive and can have open access to this key asset.
- Consideration of upgrade of Myimbarr Community Park with hybrid turf technology in high-wear areas for both fields, once resources allow to provide a further 10-15% of playing hours.
- 4. Development of a Myimbarr Masterplan to explore infrastructural capacity of a single synthetic football field onsite.





Section 2: Site Assessments and Investigations Understanding and Prioritising the Opportunities

> Access the options to shortlist and allow a rigorous process to identify options for the short, medium and long term will create a strategic gameplan for Council.



2. Site Assessments and Investigations

2.1. Preliminary Site Assessments

Site assessments are critical to identify the priorities for Council ensuring sustainability and greatest impact on participation for the whole community. This is driven by equitable access for all and considerations of impact on management practices. This section provides a summary of sites identified in preliminary investigations, including opportunities and constraints.

2.1.1. Site Assessments

1. Croome Regional Sporting Complex



Opportunities

- Established regional sporting facility with adequate parking provision and supporting infrastructure to accommodate additional play/training opportunity
- Supporting facilities nearby to the site include amenities, dugouts, lighting
- Opportunity to co-locate with established facility
- Little disturbance to residences due to location
- •

Constraints

- Established regional sporting facility with existing user groups, ownership issues may arise
- Limited space for multi-use design
- Nearby Hockey fields are built up which creates a land drop off nearby to the site and cricket area. Potential fill required
- The site is impacted by the Obstacle Limitation Surfaces (O LS); the area/airspace around the Illawarra Airport which must be protected from obstacles so aircraft can safely enter and exit. This may have implications to lighting and other field provisions

2. Myimbarr Community Park



Opportunities

- Fields Revisit field orientation
- To enhance an already established and highly utilised area
- Supporting infrastructure exists at this location

Constraints

- Already an oversaturation of sporting facilities at this location
- Parking is already an issue at this location
- Fourth and final field to be delivered is grass
- Lighting upgrade would be required
- Fencing and synthetic run off area might impact on the other field dimensions and/or wetlands, this would need more investigation

3. Barrack Heights



Opportunities

- Existing associated infrastructure at this location includes canteen, toilet facilities
- Opportunity for sport field formalised

Constraints

- No formalised parking. Small grassed off-street parking area and on street parking available around perimeter of site
- Surrounded by residential development

4. Balarang Reserve, Oak Flats



Opportunities

- Multiple pedestrian access points
- Potential space for multiple fields
- No existing sport user groups at this location

Constraints

- Path alignment **will** be required
- No current sporting facilities or associated infrastructure at this location
- No formalised parking. On street parking available around perimeter of site
- Surrounded by residential development

5. Terry Reserve



Opportunities

• Supporting facilities nearby to the site include amenities

- Located in sporting complex, opportunity to colocate nearby to established Croome Regional Sporting Complex
- Little disturbance to residences due to location
- Currently multiple sporting fields

Constraints

- Opportunity to master plan the area, to determine which field is converted to synthetic
- Some of the land is flood affected which will have implications to suitability of synthetic technology
- Terry Reserve entry is low-lying and flood prone
- Flooding implications if field is built up

6. Shane Lee Field, Oak Flats



Opportunities

• Supporting infrastructure including new formalised parking, new lighting, new amenities

Constraints

- New lighting is only at training level
- Not flood affected, but current field holds water

7. Shell Cove



Opportunities

• New space, no existing user groups

Constraints

- Built on landfill site, not acceptable for synthetic technology. See note below
- Current sports field design is multiuse, Cricket and AFL
- Only space for one field
- Surrounded by residential area
- Access through residential streets

Note - Landfill site which will 'move' more than a synthetic field can accommodate for sport Shell Cove was visited, and as the field is still in the midst of "settling" and will be for the next 20 years, it was considered by the Report author as being exceptionally risky for Council. The design standards for a football field (synthetic) would not allow more than 10mm over a 3m line. It is expected that the field could settle by as much as 100m over the next 20 years. This would therefore not be acceptable.

8. Benson Basin



Opportunities

- No current sports user groups here
- Sports field, amenities block and car parking to be delivered

Constraints

- Flooding
- Detention basin function and basin to be lowered

9. Con O'Keefe Park



Opportunities

- A strategic master plan for the site (and wider precinct) is in progress
- Flood free

Constraints

- Lots of existing users
- Masterplan in progress which could determine other uses at the site
- Limited parking
- Surrounded by residential development

10. Albion Oval



Opportunities

- Opportunity for improved multi-sports field complex
- Located centrally within the City
- Supporting infrastructure exists, including lighting. An upgrade for carpark and amenities is planned

Constraints

- History of vandalism
- Existing user groups

2.1.2. Conclusion and Recommendations for Shortlisting

The five sites assessed are shown on Map 1below.



Map 1: Short-listed Sites

The five short-listed sites are:

- Albion Oval, Albion Park Rail
- Croome Regional Sporting Complex, Croome
- Myimbarr Community Park, Shellharbour
- Shell Cove, future sportsfield, Shell Cove
- Terry Reserve, Albion Park

Each site received a desktop and site assessment with a team of Council staff and the Consultant. A detailed assessment was conducted as part of the prioritisation process and each site was assessed in accordance with QBL and other relevant strategic frameworks. These assessments are attached (Attachment 1) and results shown in this Section.

2.2. Short-listed Site Assessments

1. Albion Oval

Currently the field is used well but with an upgrade could be central for Council's provision of synthetic sports fields moving forward. It would allow for multi-sport and recreational needs while also used as a central hub for other natural fields if they are unplayable.



a) People/Community

The site is currently used for:

- Soccer training for juniors, church leagues and weekend games
- Touch Football regular usage
- Cricket 2 x weekend competition, no training, 2 x cricket wickets
- Used winter afternoons and evenings, as well as school usage
- Existing small skate park
- History of small levels of vandalism

The opportunity to masterplan the site to include:

- A walking/jogging track around the outside of the field for exercise
- Youth precinct expansion (Tongarra Road end) to include 3 on 3 basketball
- Fitness and exercise stations close to 'jogging path' around whole field
- Expansion of car-parking/facilities
- Re-configuration of fields for dual-synthetic sports fields to accommodate Football (Soccer), Australian Rules, Touch and Cricket
- Expanded tree canopy around site, with strategically sited benches

This could create a central hub for exercise, recreation and community sport in the centre of the municipality.

b) Planet/Environment

- The current considerations include:
- Natural waterline Casuarina stands, drains to New Lake entrance drain pipes

- No engineered drainage or irrigation, with natural swale on far side (Woollybutt Drive side) of field, which collect from the moisture holding grounds
- Next to overflow drainage basin, which needs to be kept clear
- Heavy clay soils, which impact on the moisture levels
- NAVIN study will need to be considered Aboriginal heritage
- Size of fields will need to consider Heat Island Effect – offset with tree canopy strategy, waterharvesting opportunities and landscaping overall
- New amenities about to be constructed to complement approx. 150 carpark spaces

The opportunity for a masterplan is significant to re-affirm the opportunity for a synthetic surface at this venue with an overall upgrade.

c) Prosperity/Economic

The broad price for a two field development would be approximately \$3.5 million, assuming no lights needed. The opportunity to embrace waterharvesting, a youth precinct and exercise trail would increase this cost. The estimated costs would be addressed through the masterplan. It is recommended to allow \$5 million

d) Leadership

The management of the site lends itself to continue to be managed by Council. No lease arrangements are recommended for this community hub. It is recommended user groups book the facility for use.

e) Conclusion and Recommendation

This is the strongest site considered, due to the central nature within the municipality, the current usage, the opportunity for multi-use and multi-sport.

The site assessment has ranked Albion Oval as first priority (1), with a comparison table shown below, and the comparison table in section 2.3. A Full detailed assessment of each site can be seen in Attachment 2

Sports Site Assessment		Weighted Score Resu Each Site			s For
	Weighting	Cromme RSC	Myimbarr Com Pk	Terry Reserve	Albion Oval
Economic Criteria (Prosperity)	Total Wt Score	ore			
Economic Sub Total		10.4	14.6	8.3	21.9
Environmental Criteria (Planet)					
Environmental Sub Total		18.8	17.0	18.2	22.2
Community Criteria (People)					
Community SubTotal		20.8	17.7	22.9	24.0
Management & Sporting Pathway Criteria (Pathway)					
Management Sub Total		17.5	16.3	13.8	21.3
Grand Totals		67.5	65.6	63.2	89.2

By embracing the environmental opportunities (water harvesting and tree canopy strategy) Albion Oval could create a significant 'Active Hub' for the community.

A Masterplan is recommended to be developed for the site.

2. Croome Regional Sporting Complex

An unused parcel of land between the lower hockey field and the cricket oval, could be converted into a "training tablet" for football (all codes) and used as an overflow.



a) People/Community

- The new area would satisfy demand for football codes (AFL already made inquiries)
- Opportunity for training and multi-use by football codes

b) Planet/Environmental

- Significant work needed due to the landscape of the proposed site
- Impact on drainage into the waterway needs to be explored further
- Gas line (6-8m underground) could impact the design/size
- Nearby carparking/toilets from other facilities may need to be expanded
- Lighting needs to embrace height restrictions
- Land-locked land ownership impacting the whole site, but the opportunity is significant and a joint masterplan with Terry Reserve should be considered
- Ideally would consider Terry Reserve and Croome a single site
- RMS Croome Masterplan considerations
- Access to fields would need careful planning from current facilities
- NAVIN study to be considered (Aboriginal heritage)

c) Prosperity/Economic

 It is expected that the redevelopment would be a high cost due to the landscape slope, the closeness to the waterway, the gas pipe and low level lighting

d) Leadership

 The management could be governed by Council's Shellharbour City Stadium team, who currently manage most of the site

The site assessment has ranked Croome Regional Sports Complex as second (2), with a comparison table shown below, and the comparison table in section 2.3. A Full detailed assessment of each site can be seen in Attachment 2

Sports Site Assessment			Weight d Score Result Each Site			lts For
	Weighting		Cromme RSC	Mymbarr Com Pk	Terry Reserve	Albion Oval
Economic Criteria (Prosperity)	Total Wt So	ore	1			
Economic Sub Total			10.4	14.6	8.3	21.9
Environmental Criteria (Planet)						
Environmental Sub Total			18.8	17.0	18.2	22.2
Community Criteria (People)						
Community SubTotal			20.8	17.7	22.9	24.0
Management & Sporting Pathway Criteria (Pathway)						
Management Sub Total			17.5	16.3	13.8	21.3
Grand Totals			67.5	65.6	63.2	89.2

e) Conclusion and Recommendations

The complexities of this site (management, landscape, etc.) and the fact it would predominantly be used for training and overflow from other fields would not make this a priority field.

Development of Masterplan that is integrated with Terry Reserve would be recommended.

3. Myimbarr Community Park

Myimbarr Community Park is a multi-sports park hosting Rugby League, AFL, Cricket, Athletics (grass track) and Football (Soccer). The consideration is the football fields due to the success of the clubs that use the two fields.



The concept would be to consider two options:

- i.) Upgrade the two natural fields to synthetic
- ii.) Redevelop a piece of unused land into a natural grass field (100m by 64m) and reinforce the two natural fields with hybrid reinforcement technology

a) People/Community

- Soccer training and matches (juniors and seniors)
- Cricket
- Oz Tag
- Significant club use for Football (Soccer) and a synthetic will provide opportunities for other clubs, community organisations and broader community to use the site.

b) Planet/Environmental

- Excellent irrigation and drainage creating tolerant surface for droughts/rains
- Water harvesting used for irrigation, after wetlands water treatment
- Flood free
- Waterpipe (north-east corner of fourth field)
- Carpark limited to cope with usage numbers
- Amenities, pathways and canteen
- Acid sulphate soils contained
- NAVIN study to be considered (Aboriginal heritage)

c) Prosperity/Economic

 The investment could be straight forward as no indication of site complications. If the two fields were converted this would generate significant traffic issues and this would increase costs considerably.

d) Leadership

To ensure community perception that such an investment was provided to the whole community, the governance and accessibility for the two fields, plus the new one should be reviewed to ensure access and equality issues are addressed.

The site assessment has ranked Myimbarr Community Park as third priority (3), with a comparison table shown below, and the comparison table in section 2.3. A Full detailed assessment of each site can be seen in Attachment 2

Sports Site Assessment		We	Ve ghted Score Results Fo Each Site			
	Weighting	Cromme	Myimbarr Com Pk	r, Reserve	Albion Oval	
Economic Criteria (Prosperity)	Total Wt Score					
Economic Sub Total		10.4	14.6	8.3	21.9	
Environmental Criteria (Planet)						
Environmental Sub Total		18.8	17.0	8.2	22.2	
Community Criteria (People)						
Community SubTotal		20.8	17.7	2.9	24.0	
Management & Sporting Pathway Criteria (Pathway)						
Management Sub Total		17.5	16.3	3.8	21.3	
Grand Totals		67.	65.6	3.2	89.2	

e) Conclusion and Recommendations

I. Due to the continued growth on site, an additional field should be developed that is natural, with the two grass Football fields being reinforced in highwear areas to support it with the additional hours of use



4. Terry Reserve

Terry Reserve needs to be considered with Croome Regional Sporting Complex and could address a regional demand by creating new sports fields and connection of the two sports grounds.



The key summary includes:

a) People/Community

- Currently soccer (junior/senior) training and competition
- Pony Club
- Passive users, walking, play space, bikes

b) Planet/Environmental

- Distance to amenities is more than one would expect and therefore new ones needed
- Gas line (6-8m underground)
- Impacted by Airport Obstacle Limitation Surface (OLS)
- Opportunity to realign whole site with Croome RSC across waterway and masterplan holistically for both sites
- NAVIN Study to be considered (Aboriginal heritage)

c) Prosperity/Economic

 Significant cost, but significant generational opportunity to create an integrated multi-sports hub between both spaces

d) Leadership

Council has a medium to long term opportunity to consider purchasing the 'landlocked' land and then this would allow great synergies with Croome Regional Sports Complex. The proposed 'integrated sites' would then allow for key open spaces to be connected with additional sports fields including synthetic sports fields.

The site assessment has ranked Terry Reserve as fourth (4) priority (4), with a comparison table shown below, and the

comparison table in section 2.3. A Full detailed assessment of each site can be seen in Attachment 2

Sports Site Assessment		Weighted Score Results F Each Site				For
	Weighting	Cromme RSC	Myimbarr	Terry Reserve		Oval
Economic Criteria (Prosperity)	Total Wt Score	ore				
Economic Sub Total		10.4	14.6	8.3		1.9
Environmental Criteria (Planet)						
Environmental Sub Total		18.8	17.0	18.2		2.2
Community Criteria (People)						
Community SubTotal		20.8	17.7	22.9		4.0
Management & Sporting Pathway Criteria (Pathway)						
Management Sub Total		17.5	16.3	13.8		1.3
Grand Totals		67.5	65.6	63.2		9.2

e) Conclusion and Recommendations

This once in a generational opportunity within a municipality should be masterplanned across both Terry Reserve and Croome Regional Sporting Complex to create a mix of sports, recreational options and considerations to the sites' governance.

Assessment Comparison 2.3.

Each site has been assessed and scored (Attachment 2.1 -2.5) and the following scores are provided:

	Weighted Score Results For Each Site				
	Weighting	Croome RSC	Myimbarr Com Pk	Terry Reserve	Albion Oval
Economic Criteria (Prosperity)	Total Wt Score				
1. Capital Installation/Upgrade Return On Investment	0.0	2.1	2.1	1.0	3.1
 Additional capital cost per hour of usage / person 		1.0	2.1	1.0	3.1
3. Maintenance & Renovation Cost Impact		2.1	2.1	2.1	4.2
4. Cost Recovery Opportunity		1.0	1.0	2.1	3.1
5. Additional Costs for specific Challenges to the Site		1.0	4.2	1.0	4.2
6. Secondary Funding		3.1	3.1	1.0	4.2
Economic Sub Total	0.0	10.4	14.6	8.3	21.9
Environmental Criteria (Planet)	10.4				
1. Aesthetic Appearance Integration		2.3	2.3	1.7	2.3
2. Water Consumption/Conservation		2.3	2.3	1.1	1.7
 Flood / storm Impact on Projects Sustainability 		2.3	2.3	1.1	2.3
 Waterway and Drainage Impacts 		1.1	1.7	1.1	1.7
5. Geotech / Civil Pavement Likely Impacts		1.1	1.7	1.7	2.3
6. Environmental Conditions of Subsoil		1.1	1.7	1.7	2.3
7. Microplastics Impact on Land and Waterways		2.3	0.0	2.3	2.3
8. Maintenance Impact on the Environment		1.1	1.7	1.1	1.7
9. Increased Parks/Open Space Value		1.7	1.7	2.3	2.3
10. Built Footprint Encroachment		1.7	1.7	2.3	1.7
11. Heat and Heat Island Considerations		1.7	0.0	1.7	1.7
		0.0			
Environmental Sub Total	0.0	18.8	17.0	18.2	22.2
Community Cuite at					
(People)	18.8				
1. Demand and Usage Impact		4.2	4.2	4.2	4.2

2. Multi-purpose Surface Capability		3.1	4.2	4.2	4.2
3. Prioritises Inclusion of Whole Community		2.1	2.1	4.2	4.2
4. Shared Use Opportunity		3.1	2.1	2.1	4.2
5. Location Impacts		4.2	2.1	4.2	3.1
6. Public Acceptance and Use		4.2	3.1	4.2	4.2
Community Sub-Total	0.0	20.8	17.7	22.9	24.0
Management & Sporting Pathway Criteria (Pathway)	20.8				
1.Management					
Model/Governance Structure		3.8	2.5	2.5	5.0
2. Aligned with Government Policies and Strategies		5.0	3.8	3.8	5.0
3. Business Case Sustainability		1.3	1.3	2.5	2.5
4. Meets Participation Pathways		2.5	5.0	3.8	3.8
5. Facility Priorities Achieved		5.0	3.8	1.3	5.0
6. Public Acceptance and					
Use	0.0				
			0.0		0.0
Management Sub Total	0.0	17.5	16.3	13.8	21.3

0.0

67.5 65.6 63.2

89.2

Grand Totals

2.4. Conclusion and Recommendations

2.4.1. Conclusion

With the growing population over the next decade (+16%), together with specific growth in Football/Soccer, Council needs to consider how it can continue to accommodate the sports participation for additional sporting hours access. Balanced with embracing technology that can extend natural turf fields (e.g. hybrid turf in high-wear areas), conversion of natural turf fields to materially add an additional 2,000 hours per field or build new fields approximately with 3,000+ hours of synthetic.

There are a number of spaces that can be converted to synthetic turf fields, including Croome Regional Sporting Complex, Terry Reserve and Myimbarr Community Park.

2.4.2. Recommendation

- Albion Oval be identified as the priority sportsground to receive funding to redesign the facility and to an Active Precinct. By embracing the synthetic technology explored through the masterplan process for 2 synthetic fields (Football/Soccer, AFL, Cricket, Touch and Oz Tag); Expansion of the skate park with 3x3 courts to develop a small youth precinct and the creation of a jogging/walking track around the outside (granitic sand) of the field to activate the community, with exercise/fitness equipment appropriately placed.
- Development of a longer term masterplan for Croome Regional Sporting Complex/Terry Reserve, to create an integrated and expanded hub that explores both active and passive leisure and community sports provision. The management of the whole site should also be reviewed so that the community perceive and can have open access to this key asset.
- Consideration of upgrade of Myimbarr Community Park with hybrid turf technology in high-wear areas for both fields, once resources allow to provide a further 10-15% of playing hours.
- 4. Development of a Myimbarr Masterplan to explore infrastructural capacity of a single synthetic football field onsite.





Section 3: Sports Surface Technology Technology to Meet Demands of Tomorrow

AND AREA & PROPERTY CARDINA

Synthetic sports surface technology has improved the ability for increased participation in numerous sports since its introduction over 50 years ago, with next generation solutions available that have embraced environmental as well as community and economic sustainability. The technology can make a material difference to the number of hours that can be played on a single field.



3. Sports Surface Technology

3.1. Growing Embracement of Synthetic Surface Technology

With the challenges of a growing population that are wishing to recreate and play sport (socially, competitively and for training) together with those who are keen to use sport as a means to stay fit, the pressure on local community sports fields continues to grow. This pressure on natural turf fields is intensified by many playing modified and adapted versions of sports. 5-a-side Football, AFL 9's, Touch Rugby, Viva Rugby and Hockey 5's are a few examples which result in a greater intensity of use.



 $\ensuremath{\mathsf{Photo}}\xspace$ 2: Multi-sport field designed for local parks to encourage play and recreation

3.2. The Challenges

In addition, with all levels of government encouraging children to play sport and recreate there is a resulting increasing daytime and weekend usage, not forgetting the changes in weather patterns, with some states having more rain or greater droughts then they can remember, both of which are becoming more common. So how can natural turf really cope with the demand? The challenge for local government, education and sport is how their natural surfaces can cope with the additional intensity of recreation, training and matches. So, what are the options informing the Decision-Making Process?

The field of play design and placement should be considered within the context of the network of playing fields, to ensure that the geographical placement, management and performance standards are considered strategically.

To make the decision on the type of surface that will be needed for a specific project there are a number of variables that need to be considered. The most common decision-making points are based around:

• Playing capacity

What are the needs of the community to satisfy demand? What type of synthetic or hybrid surface together with the current facilities should be planned for the future to meet the growing demand?

• Standards of play

Is there a specific standard for the level of sport that is linked to the International Sports Federation or National Sports Organisation that the sport or clients wishes to have in place? (e.g. Hockey, Athletics and Netball tend not to play on natural grass).

Economic considerations

What can be afforded at the capital installation time and for the recurring budget costs of maintenance and replacement costs? There is also a need to consider the revenue strategy opportunities to offset the budget costs.

• Technical consideration

What are the technical aspects that will need to be considered to achieve the previous three decision making points?

• Strategic alignment

How does the suggested decision align with key strategic and policies of the purchaser and the key stakeholders?

• Environmental benefits

What are the benefits and implications for the environment of the various options to assist with the decision-making point, from Green Engineering best practice, water sustainability, installation methods, management sustainability and impact on the environmental footprint?

All of these options have been built into this Study and the decision-making assessment process being proposed.

3.3. Overview and Context

The popularity of synthetic surface technology in sport has been embraced by both community and elite levels over the past five decades.

1960's

The technology has evolved significantly from the firstgeneration knitted nylon carpet that was developed by Monsanto for the Ford Foundation at Moses Brown School, Providence, Rhode Island in 1964. The first major commercial mainstream surface was used in 1966 at the Houston Astrodome in Texas for the benefit of TV more than the sports people.

The first synthetic athletics track was used at the Mexico Olympic Games (1968) and has been the surface of choice since for track and field athletics.

1970's

Hockey found that the synthetic grass was wet the ball played far faster and the game was far more enjoyable. The sport embraced the technology and the first international hockey game using artificial turf was played at McGill University, Canada in 1975. The following year it was showcased at the Montreal Olympics and has been used ever since.

At the turn of the decade there were two schools of thought relating to the use of synthetic technology:

- Performance needs to mirror natural grass with the use of the 1st generation surfaces needing to perform more closely to natural grass; and
- Performance enhanced surfaces with IAAF (athletics) choosing the rubber tracks and FIH (hockey) choosing technology to improve the speed of the game and the performance compared to natural surfaces.

These opposing viewpoints can still be seen 40 years on when we compare how sports have embraced the use of technology.

1980's

The 2nd generation synthetic turf was developed to look and feel like grass, with the soil replaced with sand and the blades of grass replaced with 20-35mm tightly packed polypropylene yarn. This was softer than the nylon on players' skin, but when combined with sand, created some challenges:

- Playability the sand infill and yarn combination didn't let the large ball used for football (soccer) have the same playing characteristics as on natural turf. It bounced unpredictably and the roll was far faster; and
- Safety the friction on skin was significant and caused 'skin burns' which then developed into wounds if not treated.

1990's

The major manufacturers of synthetic turf understood the benefits to community and elite sport that the technology could offer but could not convince the world sports governing bodies by themselves. The world governing body with the most interest in the 1990's was FIFA for football (soccer), and they made it clear that the playability and performance needed to reflect the standards of natural turf.

The 3rd generation (3G) synthetic turf was born using a different and more holistic approach in Europe and America. After much research, the end of the 1990's saw a new generation turf, using a softer yarn, polyethylene, with rubber granules and sand now used more as ballast rather than the key component of the infill. This allowed the surface to take a normal stud/cleat, which convinced the rugby codes, AFL and cricket to try this 3rd generation, joining football and gridiron.

2000's

This decade saw the defining period for the use and adoption of synthetic technology, with many sports embracing the benefits. Many of the sport's world governing bodies:

- Developed standards for elite and/or community pitch performance, including football (FIFA), rugby union (World Rugby), hockey (FIH), bowls (WB), athletics (IAAF), Australian rules football (AFL) and tennis (ITF);
- Introduced an accreditation scheme for suppliers and/or products;
- Changed the rules of the game so that players could compete on the surfaces including: Football (FIFA), Rugby Union (World Rugby), Bowls and Australian Rules (AFL);
- Ensured that pitches were tested regularly to meet the standards; and
- Promoted the use of the technology to grow participation in the game.

2010's

The last decade we have seen systems become more sophisticated and the research has been embraced around the science of the issues affecting play, including:

- Multi-sport so that more than a single code including the football codes of soccer, union, league, Aussie rules could all be played on a single surface
- Durability the technology has developed to allow more hours and intensity of usage
- Environmental considerations removal of heavy metals; increased usage of virgin rubber and organic material and attempting to address the heat issue

2020's

This decade will see the industry continue to address the environmental challenges such as microplastics, heat,

water usage and recycling. The key evolutions of the sector may include:

- **Design** to allow for the growing trend of multisport on full size fields as well as mini-fields
- Environmental considerations addressing community concerns about the safety, health and environmental challenges that the industry face
- Management opportunities the design and planning will reflect how the fields will be managed, including embracing technology to monitor usage, increase programming, shared by multiple clubs and organisations.
- The Whole of Life costs will be embraced in the cost to use the facility.
- **Possible 4**th generation with limited infill



Photo 3: Multi-sport field in Sutherland Shire (Kareela Oval)

3.4. Synthetic Sports Surfaces Benefits and Challenges

The main reasons given for installing a synthetic surface for sport and recreational use are:

• **Climatic**: Under drought and water restrictions or excessive rain conditions, it can be difficult to

maintain a safe and suitable natural grass surface. Synthetic sports surfaces in general are not affected by the reduced or increased rainfall;

- Usage: There is a limit to the hours natural turf can be used before there is a significant impact on surface condition. A high quality natural turf surface may only withstand use for up to 20 hours¹ per week before it starts to deteriorate. Synthetic surfaces can sustain significantly higher use than natural grass with 60 hours² plus per week as an acceptable expectation;
- Maintenance: Synthetic surfaces require lower ongoing maintenance than a natural turf surface and significantly less renovation than a typical community natural turf field would need annually;
- Consistency and quality of play: Synthetic surfaces provide a consistent and safe surface all year around for all sports to play on, improving the quality of performance for each sport compared with natural playing surfaces;
- Mandated: some sport's governing bodies insist that if a particular level of game is played, it has to be on a particular quality of synthetic surface (e.g. Athletics and hockey fields etc.).

3.5. History of Synthetic Sports Turf in Australia

Australia has been embracing synthetic sports turf technology since the 1970's and in some areas it is seen as the norm now, with both the education sector and key sports such as cricket, hockey and athletics as well as the football codes are now starting to embrace it.

Over the last twenty years the key milestones where new technology has been introduced and embraced can be summarised in the following table:

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¹ As quoted by Keith McAuliffe, Sports Turf Institute in conference 2011 before deterioration of turf on average in Australia

 $^{^2}$ FIFA consultant at NSSCE Conference in Sydney quoted 80 hours per week as their expectations in Europe

Туре	Year	State	Comments
Cricket Wicket (outdoor)	1983 2010	NSW NSW	Supergrass product installed First movable cricket wicket for an AFL/CA field and outfield installed at Northbridge oval
Indoor Cricket	1970's	WA	Dennis Lillee wicket
Soccer (not certified)	1998 2005	ACT Vic	Astroturf USA, 3 rd generation (sand/rubber) at the Australian Institute of Sport (AIS) Victorian Soccer Stadium installed three football turf fields (Darebin) with a FieldTurf product installed by Tiger Turf
AFL/Cricket	2008 2010	Aus Vic	AFL published community field guidelines, with Cricket Australia for Australian Rules Football fields TEAM Sports, round sand infill on shock pad, for Melbourne City Council at JJ Holland Park
Rugby Union	2000 2014	Gold Coast, NSW	TEAM Sports, Runaway Bay Super Sports Centre, 3 rd generation (sand/rubber) – not accredited First IRB Regulation 22 Rugby Field, at Blackman Park Lane Cove
Hockey (water base)	1987	NSW	Supergrass, Homebush State Sports Centre using 15mm straight yarn
Hockey (sand-base)	1987	ACT	Balsam Pacific, Lyneham Hockey Centre, 34mm sand filled
Lawn bowls (not carpet)	1986/ 87	NSW	Supergrass, City Bowls Club, Sydney, 25mm sand filled
Tennis (rebound)	1982	NSW	Multi-use netball etc.
Tennis (lawn type)	1978	NSW	Ampol Petroleum Co. imported first 19mm synthetic grass court and installed at Ingleside, Sydney
Tennis (Clay)	2001	Vic	Grass Manufacturers, first terra cotta coloured yarn with clay coloured sand
Grid Iron	2011	NSW	TEAM Sports, with permanent five-yard markings and temporary blue paint sidelines and goal lines
Multi-sport (certified)	2016	Moore Park, NSW	Australia's first multi-sport certified field at Moore Park, Sydney, allowing Football, 11-a-side, 5-a-side (FIFA Quality Mark), Rugby Union (Regulation 22 standard) and Rugby League (Community Standard)
Rugby League	2017	NSW	Australia's first Rugby League field installed by Blacktown City Council at Kellyville Ridge

3.6. Negative Perceptions

There is a significant lack of understanding about the technology, with questions expressing concern around how the technology is made, managed and/or how it integrates into the local environment. The major concerns include:

- Environmental integration whether there is a negative impact on the environment (e.g. leaching)
- Player comfort and safety for injuries, overall safety and impact between the surface and the player

The Smart Guide to the Challenges of Synthetic Football Fields – Perception and Reality (2018) provides insights into these concerns and is integrated as this Study.

3.7. Sports Adoption and Standards

3.7.1. Introduction and Context

Many global sports have embraced the use of synthetic sports surface technology and have developed standards for fields/surfaces that can be used for community sport and stadium/elite sport. A summary is shown in Table 1 below.

The performance standards for each sport identifies the safety, performance, playability, technical and durability standards that a synthetic sports system needs to achieve. This demonstrates and provides confidence to users that the field will play with similar 'playing characteristics to a quality natural turf field. Some sports that have an engineered base surface such as hockey and hard surfaces for tennis, netball and athletics do not attempt to replicate

grass but are designed to enhance the surface playing characterises that grass allows. The emphasis of these standards is focused on the interaction between the surface, players and the ball, reflecting the playing characteristics for each sport.

It is critical for all sports that when a purchaser is considering procuring a synthetic sports system that the installation is to the appropriate International Federation sports required standards, also detailed below.

Table 1: Performance standards of synthetic playing surfaces for a range of sports

Sport	Elite/Stadium Level	Community Level
Athletics	IAAF 1	IAAF 2
Hockey	Global and Global Elite	National and Multi-sport
Football (soccer)	Quality Pro	Quality
Rugby Union	Regulation 22	Regulation 22
Rugby League	Stadia	Community
Gridiron	None	None
Tennis	ITF 2	ITF 1
AFL/Cricket Aust	N/A	Community
Bowls	N/A	N/A

3.7.2. Laboratory and Field Testing

Most sports have a process that needs to be followed before a field is certified or accredited against the sports performance standards. This process, which varies with each sport, generally has the following five steps:

Step 1: Manufacturer Agreement

The manufacturer needs to demonstrate to the world governing body of the sport that they have the credentials to produce a field to the correct standards and can provide quality assurance - either under a license (entry level) or preferred provider/producer status (higher levels of quality assurance needed).

Step 2: Laboratory Test

An accredited laboratory identified by the sport's governing body tests a sample product to ensure it performs according to their 'Testing Handbook/Guide'. If the product passes the laboratory tests it can then be used for installation.

Step 3: Pitch/Field Installation

The manufacturer, or one of their licensees, will install the product which has been laboratory tested into the field. Once installed and settled (normally around 40 hours/ up to 1 week) it can be tested.

Step 4: Insitu-Field Test

The independent and accredited laboratory on behalf of the sports peak body (e.g. AFL; FIFA; World Rugby; FIH etc.) will test the field against each performance criteria and ensure that the field installed matches the system characteristics that the laboratory test 'passed previously'.

Step 5: Certification

The world governing body of the sport will issue a certificate for the playing field/court and this will be relevant for the duration of that certificate, which can vary from: one year (FIFA Quality PRO and NRL Stadium standard); two years (WR, AFL); Three years (FIFA Quality); and up to 10 years (Tennis Court Recognition Program).

The Importance of Testing

The importance of having the field tested is linked to 'Achieving Performance' and 'Risk Mitigation'. The key sports have considered both issues. The AFL and Cricket Australia have partnered with JLT Insurance to ensure that only fields that are tested can be used for competition games. In Rugby Union, Regulation 22 states that the field should be re-tested every two years and the local union (i.e. Rugby Australia) should ensure that the member unions and World Rugby are insured against claims.

The benefits of testing:

- Peace of mind that it meets the required standards,
- The durability of the product should last the planned life expectancy,
- There will be reduced risks associated with the system,
- The maintenance is being carried out adequately, and
- The ongoing performance characteristics are being achieved.

3.8. Sports Specific Standards

3.8.1. Athletics

Athletics was an early adopter of synthetic technology and in 1968 athletics installed its first synthetic athletics track for the Mexico Olympics. The times and performances were so impressive that the sport's governing body has never returned to natural surfaces, supporting the technology in order to continue to improve performances.





Figure 1: Synthetic surface types for athletics tracks

Types of System

There currently exists a range of synthetic surface systems for athletics facilities approved for use by the IAAF. In Australia the most commonly used systems are:

- In-situ resin bound rubber crumb system ('structural spray') system
- In-situ composite ('sandwich') system
- In-situ cast elastomer ('full PUR') surface
- Prefabricated sheet synthetic surface

Athletics Track Standards

The world governing body for athletics is the IAAF and they have a certification system for the tracks which, similar to other sports have a product testing certification and a facility test, in-situ at the venue. For competition the IAAF has two standards of track: elite and community. The facility manual can be sourced from https://www.worldathletics.org/aboutiaaf/documents/technical-information

Athletics Australia have several guides available including:

• <u>General Facility Brief</u> - This outline brief may be used as a starting point for the group designated to advise consultants on the design of new athletics facilities. The facility envisaged here is a major facility with an extensive grandstand. However, it can be adapted for lesser facilities.

 <u>Recommended Procedures for Operating and</u> <u>Maintaining Athletics Facilities</u> - A synthetic surfaced athletic facility is a major investment. This paper covers recommended procedures for operating and maintaining athletic facilities.

(Editor's note these are both 2005 documentation and really needs to be updated)

Expected Life Cycle

The lifecycle of an athletics track surface is heavily dependent on the following:

- Level of use
- Level of maintenance
- Standard of initial construction
- Environmental factors (e.g. UV exposure)

The following table provides an overview of the expected life cycle for an acrylic surface:

Year	Activity
0	Pavement constructed
	Athletics track surface system installed
3-5	Repair high-wear areas
7	End of warranty period
10 – 15	Grind down to the pavement profile and apply 'wearing surface'
20+	Full resurface

Costs

Depending on exchange rates, the following table outlines typical costs for the above systems.

Athletics Track System	Rate (/m²)
In-situ Resin Bound Rubber Crumb System	\$40 – 45
In-situ Composite System	\$65 – 70
In-situ Cast Elastomer System	\$90 — 95
Prefabricated Sheet Synthetic Surface	\$110 – 120

3.8.2. Australian Rules Football / Cricket

As custodian of the game, the AFL has recognised the need to develop ways to increase the carrying capacity of their surfaces and protect them against weather extremes as more people wish to play their sport. This approach should assist in increased participation rates, reduce injuries and allow more people to play more often.



Photo 4: AFL/Cricket and Football at ELS Hall Field, Ryde City Council NSW (source: Turf One)

In 2007 the AFL together with Cricket Australia, Sport and Recreation Victoria and Australia's largest public-sector insurance company, JLT Trustees, collaborated with researchers³ to develop a set of guidelines for community use of synthetic surfaces on which to play Australian Rules Football and Cricket. As the majority of Australian Rules Football grounds are also cricket grounds, it was important for any standards to ensure it was suitable for play by both sports.

The research explored the playing characteristics of quality natural turf and developed the performance criteria that the surface needs to be judged against, including the mechanical properties of the surface, ball and player interactions with the surface, using internationally recognised testing equipment and procedures.

Australian Rules Standards



The results of the study enabled a development of standards for Artificial Turf for AFL and Cricket⁴. Since this time numerous pitches have been tested, a number of others have been installed where cricket is played on football (soccer pitches), and the same standards are used.

In 2018 the standards were updated with a user-friendly handbook⁵. The handbook 'fine-tuned' the standards, in light of what has been learnt on synthetic turf since 2013, the main changes are to the benefit of the game.



The new standard⁶ also allows for the product and not just the manufacturer to be accredited, which is a very positive step forward in Australia as it provides greater competition in the marketplace, like today's global approach.

The AFL have also developed their Preferred Facilities Guide

which can be sued for connecting the on-field and off field needs of a synthetic sports facility.

Cricket Standards

Regarding cricket, many councils have used synthetic wickets for years and this has historically been covered by soil during the winter months. This often causes safety concerns and reduces the consistency of play where the soil is located. According to Cricket Australia's guidance⁷, the wicket should be 25m-28m long and 2.4m to 2.8m wide, and the turf should be between 9 and 11mm in length. This information can be found in their AFL Preferred Facilities Guidelines (2019)⁸.

⁶http://www.aflcommunityclub.com.au/fileadmin/user_upload/Manage Your_Club/Facilities/2E_AFL_CA_Synthetic_Turf_Product_Certification 2018_Overview_f_AFL_CA_Synthetic_Turf_Certification_.pdf) ⁷ Reference: Letter to LGA's in Victoria – dated 2010

⁸http://www.aflcommunityclub.com.au/fileadmin/user_upload/Manage Your_Club/Facilities/AFL_Venue_Guidelines_2019 - FINAL.pdf

³ Ballarat University (now Federation University)

⁴ Development Standards for the use or Artificial Turf for Australian Football and Cricket (2008 DIW May; L. Otago; N. Saunders; E. Schwarz: University of Ballarat School of Human Movement and Sport Science

⁵ Australian Football League and Cricket Australia Handbook of Testing for Synthetic Turf (Sep 2013 <u>www.aflcommunity.com.au</u>)



Unfortunately, there are no standards for the cricket wicket in Australia to this date and the England and Wales Cricket Board have the only global standards which have not been embraced yet in Australia. So, depending upon the standard that the synthetic turf wicket is being used for this should be considered.

Cricket Australia have provided guidance on synthetic sports surfaces in their Community Cricket Facility Guidelines⁹.

Expected Life Cycle

The lifecycle of an Aussie Rules field surface is heavily dependent on the following:

- Level of use
- Level of maintenance
- Standard of initial construction
- Environmental factors (e.g. UV exposure)

The following table provides an overview of the expected life cycle for an acrylic surface:

Year	Activity
0	Pavement constructed
	AFL/Cricket surface system installed
3-5 years	Repair high-wear areas
8-10 &	Replace carpet and infill, renovation to civil
16-20 & 24-	pavement may be needed
30 years	Shockpad will probably need to be replaced
	between 24 and 30 years

Costs

The estimated cost for a 17.500m² would be in the region of \$2.6-\$3.0 million. The annual maintenance costs associated would be approximately \$35,000. Replacement expectation based on 50 hours per week on medium intensity would be approximately 10 years.

3.8.3. Bowls

General

There are two main surface options (natural and synthetic) utilised for bowling greens. This guidance paper will provide an overview of the following surfaces:

Natural Turf

- Sand Filled synthetic turf
- Woven carpet
- Needle punch carpet

Typically, state and international competition are played on high quality natural turf greens.

Standards and Requirements

The governing body for lawn bowls, World Bowls Ltd, provides standards for the minimum performance requirements of a lawn bowls surface, specifically in regard to the following:

- Green speed (the number of seconds taken by a bowl from the time of its delivery to the moment it comes to rest)
- Surface draw (the distance between trajectory of a rolling biased bowl and a straight line between start and end points)
- Surface evenness (measurement under a 3m straight edge)
- Design level (a comparison of theoretical and actual levels)
- Infiltration rate (the rate water enters the green surface)

World Bowls has developed an approval system for manufacturers/ suppliers of synthetic surfaces, utilising the above standards, to ensure surfaces are being sourced from reputable suppliers.

Natural Turf

Natural turf is the traditional surface type for a bowling green. The profile would typically comprise of a growing medium (e.g. sand or soil) and a warm or cool season turf. The turf species selected on a bowling green will typically depend on the local climate and availability at time of construction.

The advantages of this system are:

- Lower surface temperature on hot day compared with synthetic surfaces
- Easier to rectify damages/ uneven patches in localised areas

The disadvantages of this system are:

- Higher maintenance practices required
- Weather-dependent play
- Reduced hours of use

⁹ <u>https://www.community.cricket.com.au/clubs/facilities-guidelines</u>

- Requires watering throughout the year to maintain turf coverage
- Longer construction phase due to the period required for turf establishment

Sand Filled / Dressed Synthetic Turf

A typical sand filled surface system would include a stone base, sand levelling layer and cushioned grass.



Concept Surface graphic displayed

Figure 2: Sand Filled Carpet (source: ABS Sports)

A sand filled synthetic turf is a tufted synthetic carpet laid over a free draining engineered base and filled with sand to hold the synthetic fibres upright. A sand filled carpet pile height is typically 13-15mm with approximately 8mm of sand infill (i.e. 5-7mm pile height exposed) and historically has had an average of 20 tons of sand.

Currently many synthetic carpet suppliers are leaning to sand dressed carpets in preference to the sand filled. By embracing a denser fibre mix then the sand dressed only uses 12-14 tons of sand.

The advantages of the sand dressed system are:

- All weather surface
- Higher allowable hours of use compared with a natural turf green
- If systems consist of a shockpad, will provide comfort underfoot for users
- Can be bowled on in all four directions (i.e. ability to rotate wear patterns)

The disadvantages of this system are:

- Can scratch the woods
- Hotter surface temperature compared to a natural turf green
- Higher capital costs than natural turf

This is the most 'forgiving' system, but many traditional and competitive bowlers are not fans of this surface.

Woven Carpets

Woven carpet is a tensioned bowling green unfilled synthetic surface. Typically, a woven carpark has a height of around 4mm. The surface is tensioned to provide a consistent playing surface performance.

Woven Carpet surface systems would often consist of a stone base, sand levelling layer, under pad and woven material.



Concept Surface graphic displayed

Figure 3: Woven Carpet Bowls Green (source: ABS Sports)

The advantages of this system are:

- Consistent performance
- Higher allowable hours of use compared with a natural turf green

The disadvantages of this system are:

- Hotter surface temperature compared to a natural turf green
- Higher capital costs than natural turf
- Can generally only be used in two directions (perpendicular to seams)

Needle Punch Carpet

Needle punch carpets are manufactured by converting loose fibres into a non-woven fabric. The product is generally 6-9mm high overlying a 3-9mm underlay.

Needle Punch and Woven Carpets can be played in both directions and clubs are encouraged to do so, creating even wear across the surface. Most clubs prefer to play pennants across the seams, but local inhouse bowls and barefoot bowls can be played with the seams. It is recommended that clubs use the seams as the centre therefore negating any controversy about bowls bouncing

or running in the seam. Again, if the green is laid correctly, the seam should not affect the bowl trajectory.

Needle Punch Carpet surface systems typically consist of a stone base, sand levelling layer, under felt and needle punch surface.



Figure 4: Needle Punch Carpet (source: ABS Sports)

The advantages of this system are:

- Higher allowable hours of use compared with a natural turf green
- All weather surfaces

The disadvantages of this system are:

- Hotter surface temperature compared to a natural turf green
- Higher capital costs than natural turf



This system, although more expensive is the most commonly adopted surface type by bowlers and is recognised as performing closest to natural grass.

Bowls Australia has developed a Bowling Greens Construction Guidelines¹⁰.

Expected Life Cycle

The lifecycle of a synthetic surface is heavily dependent on the following:

- Level of use
- Level of maintenance
- Standard of initial construction
- Environmental factors (e.g. UV exposure)

The following table provides an overview of the expected life cycle for a Needle Punched carpet bowling green surface.

Year	Activity			
0	Pavement constructed, and synthetic system installed			
7	End of synthetic product warranty period (standard for all quality manufacturers)			
10-12	Resurface of synthetic surface depending on maintenance and usage			
10-12	Minor base rectifications			
20+	Possible pavement reconstruction/ remedial works			

Typically, a sand dressed green, subject to usage and maintenance would last approximately 12-14 years, compared to a Needle Punched Carpet which would be expected to last up to 12 years.

Cost of Installation

The cost of conversion for the two greens would expect to be approximately \$535,425 with no investment allowed for lights, fences etc. The report has allowed for a contingency and for project management (10%) costs.

The difference in surface costs compared to a Needle Punch Carpet would be as follows:

- Woven \$3,000 less per green
- Sand Dressed \$15,000 less per green

1. Type of Green	Bowls	Life Expect	8 - 12 years
2. Size of area of field (40m wide x 40m long)			3,200
3. Green establishment direct costs	per m2 / lin. Metre		Total cost of field
Design			\$4,000
Site establishment, documentation & project management			\$20.000
Excavation works	\$9		\$28,800
Drainage	\$10		\$32,000
Pavement and associated concrete works	\$42		\$134,400
Plinth Construction	\$5		\$16,000
Surface Type - Needle punch carpet system	\$77		\$246,400
Surface Type - Sand Dressed carpet system			\$216,400
Surface Type - Woven carpet system			\$240,400
Needle Punched Carpet Green Sub total	\$143		\$481,600
Ancillary Costs			
Fencing			\$0
Lighting			
Mainatenace Equipment / Training and Manuals			\$5,150
Other			
Ancillary costs Sub-Total	\$0		\$5,150
Contingency & PM Costs	10%		\$48,675.00
Total investment			\$535,425

Maintenance Costs

The costs of maintenance will vary from club to club, depending on the usage, local landscape conditions (e.g.

¹⁰https://www.bowls.com.au/wp-

content/uploads/2018/09/Bowling Green Construction Guidelines.pdf

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trees, shade, weather etc.) and the level of maintenance implemented by the club compared to external contractors.

To provide an indicative cost for external contractors the following should be considered.

- Sand dressed
 - Deep clean annually \$1,250
 - Light brush

\$1,050

- Needle Punch / Woven
 - Annual Algae/Moss spray \$950

Replacement Costs

The replacement costs for two Needle Punch Carpeted greens would be approximately:

Table 2: Replacement costs as of 2021

	Cost per m2 / line	ar
Component	m	Cost of this project
Green Costs		
Site mobilisation and Documentation		16,500
Removal & disposal of existing synthetic grass surface	7.5	\$ 24,000
Base rectification	4.4	\$ 14,080
Needle punch carpet system installation		\$ 246,400
Green Sub total		\$300,980
Ancillary Costs		
Fencing (replace chainmesh)		
Lighting		
Equipment		\$ 1,000
Ancillary costs Sub-Total		\$1,000
TOTAL COST FOR FIELDS		\$301,980

3.8.4. Football (Soccer)

Football has been played on synthetic grass for a number of decades with the Federation Internationale de Football Association (FIFA) embracing the benefits of synthetic turf allowing more people to play 'The World Game'. The use of synthetic grass surfaces (designated 'Football Turf' by FIFA) over the past 15 years has resulted in the development of performance standards based on quality natural turf performance standards.

Football Standards



To ensure that the quality of football turf was consistent across the globe FIFA developed the FIFA Quality Programme in 2001 and is continually improved with the latest guidelines¹¹. These guidelines were updated and re-issued in late 2015 and are constantly updated with various versions¹².

The FIFA Quality Programme for Artificial Turf is a rigorous test program for football turf that assesses the ball surface interaction, player surface interaction and durability of the product.

FIFA has two categories of performance standards, namely:



FIFA Quality mark field – aimed at high surface use for municipal or sports club level field (recommended for more than 20 hours use per week). This was referred to as the FIFA 1 Star previously.



FIFA Quality PRO mark field – for professional and stadium usage (recommended for less than 20 hours use per week). This was referred to as the FIFA 2 Star previously.

The performance standards measured are the same for both categories, although the acceptable criteria range differs slightly. This allows the FIFA Quality mark field categories have greater latitude (less than 5 percent difference in most categories) to meet the needs of the intensity that a 40 to 60-hour usage pattern would expect.

The schedule for re-testing of fields is FIFA Quality mark pitch every three years and FIFA Quality PRO recommended pitch every 12 months.

¹²https://football-technology.fifa.com/media/1239/fqp-handbook-ofrequirements-2015-v31-w-cover.pdf

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 $^{^{11}}$ FIFA Quality Concept for Football Turf – Handbook of Requirements (October 2015: v3.1 16.03.2020)



Photo 5: Kareela Oval, two Football Fields (Sutherland Shire Council - NSW)

There are a range of Facility Guides that many State Football Associations have developed to be embraced by government and sport that wish to develop such facilities. Football NSW have led the industry with their Facilities Department developing a range of Facility Guides¹³, including:

- Building Development
- Drainage and Irrigation
- Field Markings and Equipment
- Grass Field Maintenance
- Football Lighting
- Project Management
- Provider Procurement and Management
- Synthetic Fields
- Football Scoreboards

Costs

The whole of life costs for a typical football field (8,500m²) when considering the capital (including contingency of 12.5%), maintenance and replacement costs, would be in the region of:

Whole of Life Costings	10 years	20 years	30 years	
Capital Costs	\$ 1,904,625	\$ 1,904,625	\$ 1,904,625	
Mainteance costs	\$ 262,000	\$ 524,000	\$ 786,000	
Replacement costs		\$ 466,400	\$ 1,085,800	
Total (over 10, 20 & 30 years)	\$ 2,166,625	\$ 2,895,025	\$ 3,776,425	
Annual Whole of Life Cost	\$ 216,663	\$ 144,751	\$ 125,881	

This can be broken down as follows:

• Capital Costs

1. Type of synthetic field of play (sports name)					
2. Size of area of field	8,500.00		8,500		
3. Field establishment direct costs	per m2 / lin. Metre		Total cost of field		
Design & Procurement costs	\$60,000		\$60,000		
Site establishment, documentation & project management	\$100,000		\$100,000		
Sub grade works	\$13		\$110,500		
Drainage, gutters and concrete works	\$22		\$187,000		
Base pavement (e.g.road base)	\$45		\$382,500		
Additional costs to offset site challenges (see Part 2 Section 6)			\$0		
Synthetic sports surface and infill	\$46		\$391,000		
Shock pad installation	\$20		\$170,000		
Pitch Sub total	\$146		\$1,401,000		
Ancillary Costs					
Fencing	\$12		\$102,000		
Lighting	150000		\$150,000		
Equipment	\$40,000		\$40,000		
Pathways			\$0		
Irrigation / Other			\$0		
Ancillary costs Sub-Total	\$190,012		\$292,000		
Contingency & PM Costs	12.5%		\$211,625.00		
Total investment			\$1,904,625		

Maintenance Costs

2. Annual Maintenance Costs						
Component			Au	s.\$ cost		
Field of Play Maintenance Costs	u	nder 40 hours	4	40 - 60 hours	C	over 60 hours
Routine maintenance grooming	\$	15,000	\$	17,000	\$	21,000
Professional service grooming	\$	3,000	\$	3,000	\$	3,000
Algaecide / Weedicide materials	\$	200	\$	200	\$	200
other (please list)	\$	2,000	\$	2,000	\$	2,000
Pitch Sub total	\$	20,200	\$	22,200	\$	26,200
Total Annual Maintenace Cost For Field	\$	20,200	\$	22,200	\$	26,200

Replacement Costs

3. Replacement Costs						
Component		Aus. \$ (no CPI)				
Pitch Costs	After 10 years	After 20 years	After 30 years			
Removal & disposal of existing synthetic grass surface						
Shock pad rectification	\$17,000		\$17,000			
Synthetic surface installation	\$391,000	\$391,000	\$391,000			
Shock pad replacement should be every 20-25 years amortised pa		\$170,000				
Pitch Sub total	\$ 408,000	\$ 561,000	\$ 408,000			
Ancillary Costs						
Fencing (replace chainmesh)	\$20,400.0	\$20,400.0	\$20,400.0			
Lighting	\$30,000.0	\$30,000.0	\$30,000.0			
Irrigation (optional)	\$0.0	\$0.0	\$0.0			
Equipment	\$8,000.0	\$8,000.0	\$8,000.0			
Ancillary costs Sub-Total	\$58,400.0	\$58,400.0	\$58,400.0			
Total Replacement Costs for Field of Play	\$466,400.0	\$619,400.0	\$466,400.0			

¹³ https://footballfacilities.com.au/facility-guides/

3.8.5. Gridiron / American Football

In 1969, Franklin Field, University of Pennsylvania switched from grass to artificial turf. Over the past 40 years some of the National Football League (NFL) teams have changed back to natural grass, with some also deciding to reinvest in the latest generation synthetic technology. The University of Pennsylvania is one example that switched from synthetic (2nd generation) to natural grass before reverting to a 3rd generation pitch.

In Canada all eight stadiums in the Canadian Football League (CFL) use synthetic sports turf.

There are no standards for gridiron / American football except the Clegg Hammer Test which measures hardness. If an organisation was to consider this in Australia / New Zealand, it is recommended they should consider the World Rugby or AFL/Cricket Australia standards, especially due to the critical head fall criteria.

3.8.6. Hockey

Hockey, under the guidance of the International Hockey Federation (FIH), has been promoting the use of synthetic surfaces since the first surface was used in Canada in 1976 for an international game. FIH, in their latest handbook for synthetic surfaces¹⁴ state that their objectives to code the relevant performance requirements is to ensure that hockey pitches and matches are conducted for:

- Consistency to reflect relative team merit,
- Quality to provide an opportunity for players to display and develop their skills,
- Safety to ensure playing conditions are comfortable and reduce risk to players/officials, and
- Playability to extend playability, especially in adverse weather conditions.

FIH are keen to promote the game across the world and believe that the use of synthetic hockey surfaces will provide greater access to facilities to participate in various forms of hockey. By providing quality, safe and consistent play, participants will feel more confident in developing their skills and will be playing the game throughout their life.

Standards for the Sport

Hockey, under the guidance of the International Hockey Federation (FIH), has been promoting the use of synthetic surfaces since the first surface was used in Canada in 1976 for an international game. In 2017 they updated their global standards to include the following categories:

- Global Elite fields designed to satisfy the competition requirements of FIH Tier One hockey events. These fields are surfaced with Global Approved Products and require watering prior to play
- Global Fields designed for international and top-level national competitions, they also are surfaces with Global Approved products and require watering prior to play
- National this category of field may be used for competitive play when dry or wet. Normally surfaced with a National Approved Product (Class 1 or 2) the fields are used for lower level national, regional and club play.
- Multi-Sport Surface Recognising that facilities on which hocky is played also often have to be used by other sports, the FIH Quality Programme for Hockey Turf includes three categories of Multi-Sport Surface. Multi-Sport 1 and Multi-Sport 2 Approved Products are based on sand dressed or sand filled synthetic turf surfaces or textile surfaces, that are laid on shockpads that provide slightly wider ranges of performance than those used specifically for hockey.
- Hockey 5's Courts there are four standards for Hockey 5's courts, including Global elite, Global, National and Multi-Sport

It is also expected that in July 2020 there will be a new standard that offers certification for Football (Futsal), Hockey 5's, Netball and Tennis.

These are the key aspects that FIH have identified to underpin their performance requirements¹⁵:

- The performance standards aim at allowing players to use the fields in a safe and comfortable manner,
- Approved products from licensed manufacturers are published on the FIH website (www.fih.ch) which has been tested by an FIH accredited laboratory, demonstrating compliance to the appropriate FIH standards. These products are only valid for the specified duration, and
- Pitches are granted a certificate of compliance after field testing by an accredited laboratory, only when they meet the specified performance

¹⁴ Handbook of Performance, Durability and Construction Requirements for Synthetic Turf Hockey Pitches (FIH – May 2013)

¹⁵ Handbook of Performance, Durability and Construction Requirements for Synthetic Turf Hockey Pitches (FIH – May 2013)

standards. A current list of certified pitches is published on the FIH website (<u>www.fih.ch</u>) which are valid for two (2) years from the date of testing.



Photo 6: London Blue Hockey Field, as it is now known (source: Polytan)

Product Licensing

Manufacturers of synthetic turf for hockey pitches or multi-sport used for hockey may apply to the FIH to have their products registered as FIH approved products. Once tested by an independent and accredited laboratory they are listed on the FIH website. Only licensed manufacturers, their subsidiaries and licensees may seek FIH approval for their products.

3.8.7. Rugby League

Rugby League in Australia and New Zealand is controlled under their national governing body, namely the National Rugby League (NRL) in Australia and the NZRL in New Zealand.

The International Federation for the sport, the Rugby League International Federation (RLIF) currently seems to have limited scope in relation to synthetic surface governance.



Photo 7: Australia's first Rugby League only field in Blacktown (NSW)

The UK's governing body for Rugby League, the Rugby Football League (RFL) have embraced the technology and set standards which have been used at both community and stadium/professional level. In Australia the National Rugby league (NRL) has worked with the English RFL and has adopted their standards and enhanced them for Australia.

Standards for the Sport

The original Rugby Football League (RFL) standard based on the European Standard EN 15330-1: Surfaces for Sport Areas has been modified for the specific requirements of Rugby League in 2020. The standard takes into account the results of a comprehensive study into the performance of natural grass pitches.

Recognising that many artificial turf Rugby League pitches will also be used for Football or Rugby Union the NRL are updating their current standard and should be issued in the middle of 2020, aligning it with the requirements for FIFA and World Rugby Regulation 22 wherever possible.

Similar to the FIFA Quality Concept, the NRL performance standard recognises requirements for community and stadium use. Products suitable for Rugby League play must pass initial laboratory approval before being allowed to be installed and tested in the actual field application.

The NRL standard specifies two categories of performance: The category called 'stadium' is intended to replicate the characteristics of high-level natural grass as found in well maintained stadium settings. Surfaces meeting the 'stadium' category are intended for use in professional matches and training. The second category called 'community' which has a wider acceptance range than the stadium category is supposed to replicate the characteristics of good quality community natural grass fields.

Whilst community pitches shall be retested every two years, stadium pitches require a field retest on an annual basis.

In general, community grounds have to sustain a much higher level of use compared to stadium pitches that are predominantly used for competition matches and professional training. In this respect, the NRL categories 'stadium' and 'community' are comparable to the FIFA Quality PRO and Quality marks.

Product Licensing

There is no product licensing presently in Australia, or by the world governing body.

Costs

The costs of a Rugby League standard field are similar to that of Football and Rugby Union and for a typical 9,120m² field of play.

The costs would be approximately:

1. Type of synthetic field of	Rugby League	
2. Size of area of field	9,120 m ²	
3. Field Planning and Procurement Costs	per m² / lin. Metre	Total cost of field
Detailed site survey	\$5,000.00	\$5,000
Geotechnical investigation	\$9,000.00	\$9,000
Technical Specification and Design Package	\$40,000.00	\$40,000
Procurement	\$15,000.00	\$15,000
Project Management	\$25,000.00	\$25,000
Approvals i.e. Development Approval	\$10,000.00	\$10,000
Field Planning and Procuren	nent Costs total	\$104,000
4. Synthetic Field Direct Cost	ts	
Site establishment, documentation & PM	\$100,000	\$100,000
Disposal of spoil	\$50	\$45,600
Sub grade works	\$40	\$364,800
Drainage, gutters and concrete works	\$225,000	\$225,000
Base pavement (road	\$20	\$182,400
Synthetic sports surface and infill	\$40	\$364,800
Shock pad installation	\$24	\$218,880
Other (if required)	\$65,000	\$65,000
	Pitch Sub total	\$1,566,480
5. Synthetic Field Indirect Co	osts	
Field fencing / gates	\$150.00	\$54,000.00
Field lighting	\$150,000.00	\$150,000.00
Player benches / shelter	\$12,000.00	\$12,000.00
Equipment i.e. shoe cleaning	\$2,000.00	\$2,000.00
Retractable Netting	\$ -	\$ -
Spectator Seating	\$ -	\$ -
Pathways	\$85.00	\$98,328.00
Posts	\$4,000.00	\$8,000.00
Maintenance machinery	\$18,000.00	\$18,000.00
Marketing and Coms	\$ -	\$ -
Other (e.g. drinking water)	\$2,500.00	\$2,500.00
Ancillary	costs Sub-Total	\$344,828.00
Contingency Allowance	12.0%	\$241,836.96
PM Costs	3.0%	\$60,459.24
Total investment		\$2,317,604.20

3.8.8. Rugby Union

Rugby Union has historically been played on grass, despite several proposals over the years for alternative solutions, including clay, shale, sand and the Second-Generation artificial grass. All presented a similar problem of critical head fall and skin abrasion.



Photo 8: Rugby Union playing on Blackman Park, Lane Cove, NSW (installed by TEAM Sports, 2013)

In the past half-decade, the technology around synthetic turf has provided proven solutions for the game of rugby and the rugby world has embraced this because of the benefits for increasing participation, quality of play and consistency for the game.

Rugby Union Standards

To ensure the quality and consistency of the surface, World Rugby developed the Artificial Rugby Turf Performance Specification¹⁶, in consultation with FIFA. This standard was integrated into the Game Regulation 22¹⁷ and provides guidance on how it can be used for the game.

World Rugby has only one standard for synthetic turf, that applies to both community and stadium use. Similar to the FIFA performance standards, World Rugby has identified three basic categories that are broadly defined as:

- Ball/surface Interaction: The reaction of a ball to the surface.
- Player/surface Interaction: The reaction of a player to the surface.
- Durability: The resistance of the surface to wear and tear and the environment.
- The performance criteria can be sourced at www. http://playerwelfare.worldrugby.org/

¹⁷ Regulation 22: Standard relating to the use of artificial rugby turf

 $^{^{\}rm 16}$ IRB Artificial Rugby Turf Performance Specification One Turf Technical Manual

World Rugby Preferred Turf Producer

The following companies are Preferred Turf Producers (PTP's) and a full updated list can be found on the World Rugby website (www.world.rugby.com):

- Edel Grass B.V. (N/A),
- FieldTurf Tarkett SAS (Turf One),
- Greenfields B.V. (HG Sports Turf),
- Limonta Sports C.P.A. (Greenplay Australia), and
- Polytan.

Field Installations

Over the past few years global embracing of synthetic turf for Rugby Union has progressed significantly with countries such as Canada (3 fields); China (1); Hong Kong (3); France (23); United Kingdom (15); and New Zealand (8) installing the surface. Within Australia there are a number of competition fields including Blackman Park, Lane Cove, Randwick (x 2), Moore Park and Woollahra.

Cost

The costs of a Rugby Union field are very similar to that of a Rugby League field (see previous costs).

3.8.9. Tennis

Introduction

The International Tennis Federation (ITF) has developed a series of 'Court Surface Association Programs' that categorise the speed of the courts and quantify the quality of installation. Irrespective of the surface type, the two programs explore the pace of the surface through the ITF Court Pace Classification Program. The ITF Recognition Program allows for both products to be tested against the Court Pace Classification Program and individual courts can be rated.

Types of Surface

The types of surfaces that are recognised by the ITF have been classified in their publication ITF Approved Tennis Balls, Classified Surfaces and Recognised Courts. A Guide to Products and Test Methods¹⁸ and are summarised in Table 3. Table 3: ITF Approved Tennis Balls, Classified Surfaces and Recognised Courts

Surface code	Туре	Description
А	Acrylic ¹	Textured pigmented, resin-bound coating
В	Artificial Clay ²	Synthetic surface with the appearance of clay
с	Artificial grass ²	Synthetic surface with the appearance of natural grass
D	Asphalt ³	Bitumen-bound aggregate
Е	Carpet	Textile or polymeric material supplied in rolls or sheets of finished product
F	Clay ⁴	Unbound mineral aggregate
G	Concrete ³	Cement-bound aggregate
н	Grass	Natural grass grown from seed
J	Other	e.g. modular systems (tiles), wood, canvas

Notes: All surfaces may be porous or non-porous, with the exception of 'clay' and 'grass', which are always porous.

¹ Normally forms only the uppermost few millimetres of a court.

² "Appearance" relates only to the form of the uppermost surface material and not other characteristics (e.g. colour). These surfaces are typically composed of a carpet matrix dressed with clay, sand and/or rubber aggregate.

³ Used only when the material itself forms the playing surface. When used as a base for other surfaces (e.g. acrylic), reference will be made only to the playing surface.

⁴ This term denotes a type of surface that is constructed from naturally derived materials, and includes unbound sand or clay.

ITF Court Pace Classification Program

To assist clubs and tennis organisations in selecting the surface most suited to their requirements the ITF Court Pace Classification Program groups the surfaces into one of five (5) categories:

Slow	≤ 29,
Medium-slow	30 – 34,
Medium	35 – 39,
Medium-fast	40 - 44, and
Fast	≥ 45.

¹⁸ www.itftennis.com/technical



Photo 9: Andy Murray returns a shot at the Australian Open on the cushioned floor (source: Martin Sheppard)

The court pace is established by using a simple test¹⁹ which records the velocity before and after the bounce. The increased smoothness of the court surface increases the speed of the ball and similarly the rougher the surface the more it slows the ball down. Additionally, the higher a bounce a surface produces the slower the court will play because players have more time to reach the ball. Both of these factors are reviewed.

A product that has been tested in an ITF Accredited Laboratory (on site or in a laboratory) is included purely on the Court Park Rating and is classified for three (3) years. This list can be seen as part of ITF's website (www.itftennis.com).

ITF Recognition Program

The ITF Recognition Program is targeted at venues where the standard of play demands the specification of precise playing characteristics. Although the ITF states that this may include regional tennis centres or where national/international tournaments may be held, it is just as relevant as a quality control progress to ensure that the court standards and pace required have been delivered.

There are two levels of recognition, which according to the ITF^{20} guidelines state:

- i. One-Star ITF Recognition, and
- ii. Two-Star ITF Recognition.

One-Star ITF Recognition

Key installation properties of a court must meet ITF recommendations, which include a visual inspection to

identify any cracks or gaps in the surface and to confirm that the appearance is uniform. Any bumps or dips in the surface are measured and the slope and planarity of the court are established. Finally, the positions of the court markings and net are checked to ensure they are within acceptable limits.

Two-Star ITF Recognition

In addition to the One-Star ITF Recognition process, the Court Pace Rating is compared with the ITF Classified value for the surface product. Therefore, only surfaces which have obtained ITF classification can be tested for Two-Star ITF Recognition. If the surface product is not classified, the supplier can apply for ITF classification using the results of the on-site Two-Star Pace Rating test.

Applications and Validity

ITF Recognition expires when the court is resurfaced, or after 10 years, depending on which is sooner. However, the results are only valid on the day of testing, as properties of the court may change, due to factors such as ambient conditions, use and maintenance²¹. If the venue is used for competitions annually at a high level it should be re-tested accordingly.

An application for ITF Recognition can be submitted by any party with interest in the tennis facility, such as the owner, the organiser of a tournament held at that facility, or the supplier or installer of the court.

If successful, the results for the venue and courts will be published on the ITF technical website for a One-Star Recognition. If a Two-Star is established the product brand name will also be displayed.

ITF Recognised Supplier or Installer

Suppliers who have obtained a certain number of ITF Recognition awards for their courts will be awarded Elite ITF Recognition Supplier/Installer status, in recognition for their continued quality of their products and workmanship.

The two levels are:

- Elite Silver Level for 10 or more installations as either an installer or supplier, and
- Elite Gold Level for 50 or more installations as either an installer or supplier.

Within Australia the governing body of tennis is Tennis Australia (<u>www.tennis.com.au</u>).

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 $^{^{19}}$ ITF Approved Tennis Balls, Classified Surfaces and Recognised Courts – A Guide to Products and Test Methods

²⁰ ITF Court Surface Assessment Program

²¹ ITF Court Surface Assessment Program (p6)

Costs

The following table provides an estimate for the typical costs for the above systems.

Acrylic System	Rate (/m²)
Multi-layered acrylic system	\$12.50 – \$14
Liquid applied cushioned acrylic system	\$50
Prefabricated acrylic system	\$50 — 70
Gel system	\$55

3.8.10. Multi-Sport and Multi Games Areas

With the changing trends from traditional community sport participation to active recreation coupled with the growing sedentary lifestyles of adults and especially children, new facilities can and should be developed in a manner that encourages increased play for children and young people.

The development of Multi-use Activity Zones has taken traction in Europe and is now starting to gain interests in Australia. Section 6 explores the design options that may be considered.

These Activity Zones are colourful and encourage greater usage but are not designed to meet any performance standards, just safety standards.



Photo 10: Multi-games area, used for schools and local parklands

There are many positive examples where a purchaser of a new synthetic sports turf is interested to use the surface for more than one sport. In these cases, a request has been made to ensure the performance standards meet the needs of the sports involved. Some of these collaborations have included:

• Football code collaboration (Soccer; Australian Rules Football; Rugby Union and Rugby League)

- Football (FIFA Quality) with Hockey (Multi-sport)
- Hockey (National) and Tennis (untested)

In Australia there is only one published standard to date that formally combines two sports and that is the AFL/Cricket Australian community surface standard. The reality of this standard is that it is predominantly for Aussie Rules, as the cricket wicket has no standard, just the outfield.



Photo 11: Football and Hockey (source: TEAM Sports)

One Turf Standards has been endorsed by the sport's governing bodies of Football, Rugby Union and Hockey. In Australia Moore Park is the most considered field for multisport play with markings for 5-a-side and 11-a-side Football, Rugby Union and Rugby League and a local AFL team also trains on it.



Photo 12: Multi-sports field Moore Park, NSW (source: Centennial Parklands Trust)

The benefits for the client or purchaser are that they can program many sports at different times of the year, which could be very beneficial. Although there is a common standard, known as the 'One Turf' standard, it has not been embraced in Australia and the specific sports are specified.

3.9. Conclusion and Recommendations

3.9.1. Conclusion

The challenges facing both sport and government relate to satisfying the growing demand, as the population continues to grow. Investment in the synthetic sports surface technology around single sport, multi-sport, recreational and elite surfaces allows for increased usage.

There are a range of technological solutions that meet the majority of play, recreational and sporting needs. This is

reflected in the number of schools who are using the technology to replace asphalt and seeing the results of a growing number of children enjoying playing on the new surface.

Multi-use sports or Active Sports Zones are now becoming more and more popular for encouraging casual sports recreation by combining facilities where many sports can be played such as 5-a-side, basketball, netball, cricket etc.

The International Federations have all embraced the technology and established the base standards that need to be achieved for community fields. Smart Connection Consultancy believe that for Australia, their base standards need to be enhanced in some areas to meet the Australian conditions, especially around durability, UV radiation and porosity.

3.9.2. Recommendations for Council

- All sports fields and courts that Council invests in shall meet the International Federations (IF's) community sports field /court performance standards and be certified on installation and keep certified where critical to the sport;
- II. Tenderers / suppliers of such sports surfaces must be a licensed or preferred provider of the International Federation or an Agent of such and organisation and can supply a sports system that has been tested and has been certified by them as to meeting the IF's performance standards;
- III. The base pavement standard shall be designed to meet a twenty (20) year life expectancy and the specific suit requitement as identified by a Geotech and environmental assessment prior to tender;
- IV. Investment in such facilities should be prioritised to those who can accommodate multi-sport or take increased pressure off natural turf fields so that they can cope the growth in the participation;
- V. Any investment by Council should ensure that a sinking fund is established to accommodate the replacement costs at the end of the expected life. This life expectancy should be reviewed annually, and additional funds raised if the field is being used in a manner that will reduce its life expectancy.
- VI. Councils should provide Smart Guides to sports clubs, associations and SSO's ensure a good knowledge and understanding of the benefits and challenges around synthetic sports turf technology.



Photo 13: Sports Court in Paris

1. Attachment 1: Strategic Alignment Literature Review

1.1. Introduction

Shellharbour's Open Space and Recreation Strategy 2020-2030 (OSR) was adopted (07/04/2020) by Council to outline its 10-year plan to support and provide environments to encourage residents, visitors and people who work in the municipality to be more active. By encouraging more people to be more active more often, the surfaces need to be sustainable to cope with the intensity of usage.

The OSR has identified key aspects that are impacting on the sports grounds within the LGA including:

- Shellharbour LGA is approximately 149km² in size and is home to approximately 72,000 people
- The topographic features have influenced the pattern of urban development, resulting in historic concentration of development along the coastline and eastern portion of the LGA

- Compared to similar LGA's, Shellharbour is home to a high number of young people and families. Under 25's are 33%, with many living in new release areas of Shell Cove, Flinders, Tullimbar and Calderwood
- By 2031 over 60's are expected to be 30% of the population
- Anticipating a 16% rise in population by 2031 (c. 14,000 new people) means that the infrastructure needs to be planned now for their arrival

1.2. Strategic Framework for Synthetic Surfaces Vision

1.2.1. Councils Multiple Bottom-line Agenda

Council has embraced a quadruple bottom line agenda across Council namely to enhance the community, protect and nurture the environment, economic prudence, all through good leadership.

This report has embraced this agenda and aligned it with the UN's Sustainable Development Goals to have a holistic Framework and Vision.





1.2.2. Council's Strategic Vision and OSR Alignment Review

Councils strategic vision recognises that the Community has identified that they are a...

Naturally balanced, vibrant and connected community

Following a review of Councils OSR the following considerations will be adopted within this Report as shown in Table 1 below.

Table 4: OSR Strategic Alignment

OSR Goal Ref.	Key OSR Recommendation	Considerations for This Strategy
1.1	OSR design principles & standards	Adapt with design strategy for synthetic sports surfaces
1.5	Implement masterplans for key open spaces	Where possible ensure any synthetic sports field is part of a masterplan process
1.7	Shellharbour walking and cycling network review	Links between suburbs by walking and cycling
1.9	Review underutilised or surplus open space	Consider new open space for sports surfaces where possible
2.1 2.3 6.1	Shellharbour shared use sporting facilities	Ensure management of new synthetics sports facilities are aligned with the SFP
2.4	Sustainable field surfaces	Ensure design achieves Good Practice with sustainability for the fields over 20+ years
2.11	Council planning investment	Detail the expected Whole of Life (WOL) costs for sites identified
4.1	Protection of biodiversity and culturally significant sites	Identify as part of the Feasibility process any considerations for the short-listed sites
5.1 5.2	Promote greater usage	Design for multi-use by broadest range of community
5.4	OSR fees and charges policies	Develop pricing strategy to at least create options to retain a sinking fund and maintenance costs over 10, 20 and 30 years
6.1 6.3	Active Recreation Working Party and District and State Level Sporting Associations	Design for the greatest update at local, district and where possible State usage
6.4	Universal Access	Design to ensure Universal Access for all

1.3. Alignment with UN's SDG's

The United Nations Sustainable Development Goals (SDG's) are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice.

The UN's 17 SDG's can be aligned with Council's quadruple bottom line and this provides a significant alignment with Council's Framework. It also ensures that a strategic and sustainable framework will provide the best outcome for the community.

1.3.1. People/Community



Council OSR Priorities

- 5.1 & 5.2: Design for broadest range of usages for the whole community
- 5.4: OSR fees and charges policy ensure access for all
- 6.1, 6.3 & 6.4: Design for greatest levels of usage possible with Universal Access principles

1.3.2. Planet/Environment



Council OSR Priorities

1.1: Adopt OST design principles especially for environmental management and design practices

- 1.5: Ensure part of masterplan for the site
- 1.9: Consider underused access for sites
- 2.4 Sustainable fields design and management
- 4.1 Protection of biodiversity and culturally significant sites

1.3.3. Prosperity/Economic



Council OSR Priorities

5.4: OSR fees and charges policies

1.3.4. Leadership



Council OSR Priorities

2.11: Council planning instrument

6.1 & 6.3: Active Recreation Working Party, District and State Level Sporting Associations

1.4. Strategic Focus for Embracing Synthetic Sports Surface technology

1.4.1. Strategic Focus

The Strategic Focus has embraced the OSR principles with Councils overall strategy to ensure alignment. The mission (purpose) of embracing the synthetic sports surface technology is to:

"Provide sustainable surface options that encourage more people to be active, to play and recreate and participate in community sport, in a manner that supports natural surfaces, and can meet current and future demand."

Council is committed to delivering on this Strategic Focus by embracing synthetic sports surface technology in a manner that impacts on future planning, design, procurement, management and maintenance priorities and practices. Specifically how the technology will:

- Provide surfaces that will cope with the demand of greater participation in play, recreation and community sport
- Complement other natural turf fields allowing greater intensity of usage of the technology supported fields across the municipality, by reducing the negative impact to natural turf
- Ensure that the surfaces are designed and procured to meet the appropriate sports, environmental and safety standards

From this Strategic Focus the following strategic principles have been identified:

- People To provide opportunities on Council land that through active recreation and community sport will increase the community health and wellbeing. The opportunities will ensure that there is an accessible, equitably resourced across the City, and embraces a fully inclusive approach is promoted with gender equality, reduced inequalities and cost not be a barrier to participation.
- Prosperity To ensure the investment provides best value for the community, when considering capital, maintenance and replacement costs together with options for secondary funding
- Planet Embracing the technology should ensure that the development will create a better surface for the participants and the site, and impact positively on other sites in the neighbourhood, with benefits expected to water consumption and environmental sustainability.
- Leadership Council will explore innovative partnerships with all levels of government, community organisations, developers and schools to create more positive environments for the whole of community to participate in recreation and community sport.

This Strategic Focus allows Council to explore key places that could be more active with the embracement of the technology including

 Traditional sports facilities – using hybrid technology or full synthetic surfaces to allow for increased hours of use and increased intensity per field

- New activity spaces converting current open space, within sporting hubs into synthetic sports surfaces for training, recreation and or competitive play.
- Community facilities encouraging more people top play locally in specifically designed 'Active Parks" such as 3on3 hard courts for football, netball, basketball etc
- School and education Sites working with the local schools, Department of Education, Activation Section to open up schools and invest in the surfaces so that they can be used by the community outside of school hours
- Play and youth spaces- to embrace surfaces that will encourage young people to play and recreate, the design and surface durability needed.



Photo 14: Make the World Better - Philly's First Basketball Court (https://www.mtwb.org/phillys-first-basketball-court-surface-murals/)

2. Attachment 2: Sports Surface Evaluation

2.1. Albion Oval Site Assessment

Part 1: Si	SPORTS SURFACE EVALUATION DIAGNOSTIC										
Part 1: Site Details											
Ground Na	me:		Albion Oval			Field Refer	ence:				
Ground ad	dress:		14 Ash Avenu	e Albion P	ark Rail		Ward		Δ		
Details:			Sport Played		Football / Touch		Sport - Summer	Cricket, Touch.	summer Footb	all	
Description of the Facility:			Multi-sports venue,	housing 3 fiel	ds lends itself to a multi-re	creation and sp	ort site				
Maps of Sportsgrounds:				Map / Diagram of Site Map of Council Area Image: Constraint of the state of t							
Rationale for Description of o challenge, per field condition) considered an	Consideration current challenge (e. formance, and curre and what options ar d rationale	.g. demand int status of e being	Three field com whole site for co	plex, central mmunity use	ly located and signific e.	ant opportuni	ty for multi-us	e and multi-sport to be de	signed that upgr	ades	
Natural Surface Upgrade Consideration for Natural Upgrade (explain why you would or would not consider an upgrade to the natural turf field initially			Drainage and irr	igation to sit	e would be a significa	nt benefit					
Hybrid Surfac Consideration you would or w the natural turf	ce Upgrade for Natural Upgrade vould not consider a field initially	e (explain why n upgrade to	High-wear areas c	ould embrace	hybrid technology						
Synthetic Su Consideration explanation as impact on othe Site Usage a	rface Upgrade for synthetic surface to why this would be r fields in park or nei	upgrade and e justified and ighbourhood	The technology wil the whole communi	l increase usag ity, with walking	ge significantly while wate g and fitness tracks aroun	r harvesting the d the fields.	rain flow to irriç	gate the other fields. A whole o	fsite upgrade wou	ld activate	
Step 1: Iden	tify Current & P	roposed Su	rface Type and	Optimal Us	age			-	-		
Current Surfac	e Type & Usage-	Natural grass (x2)	Optimal Hours	50	Proposed Surface Type	& Usage-	Synthetic	Optimal Hours (pw)	120		
Step 2: Ider	tify Current Act	ual & Propo	sed Usage								
WINTER: Current usage (Hours per week)	60	No # Weeks per year	28	1680	WINTER: Proposed usage (Hours per week)	120	No # Weeks per year	32	3840		
SUMMER: Current usage (Hours per week)	10	No # Weeks per year	24	240	SUMMER: Proposed usage (Hours per week)	120	No # Weeks per year	20	2400		
playing per hour	60	Total Hours Pe	er Year	1920	No # People playing per hour	60	Total Hours Per Year		6240		
No of players per		Benchmark for NSW		0							
Step 3: Calo	ulate the Additi	onal Cost P	er Hour of Use /	per user n	umbers						
Additional hou	rs (p.a.) From propo	sed upgrade	4,320	Anticipated ca	apital cost of surface	\$ 4.000.000	Cost (WOL) pe	er hour of additional usage	\$	92.59	
Additional peo	ple hours per year w	rith proposed u	pgrade surface (Diff	in intensity of	people usage x		Cost per people	/hour of additional usage (based	¢		
additional hou	rs p.a.)					-	on 10 year life e	expectancy/usage)	\$	-	
Summary	<mark>/ of Assess</mark> m	nent									
Assessme	nt Component	Score (/4)	Weighting	Total Wt	10. Built Footprint Encr	pachment	3	2.27	1.7		
2.1: Economic	Criteria		Overall Criteria	25.00	11. Heat and Heat Island		3 2.27		1.7		
1. Capital Insta	Ilation/Upgrade	3	4.17	3.1	Environment	al Criteria Total	39			22.16	
2. Additional c	apital cost per hour	3	4.17	3.1	2. 3. Community Criteria	a				25.00	
of usage / pers 3. Maintenance	on & Renovation Cost	4	4.17	4.2	1. Demand and Usage Ir	npact	4		42		
Impact 4. Cost Recove	ry Opportunity	3	4.17	3.1	2. Multi-purpose Surface Capability		4	4.17	4.2		
5. Additional C Challenges to f	osts for specific the Site (e.g. cost of	4	4.17	4.2	3. Prioritises Inclusion of Whole		4	4.17	4.2		
disposal of contaminated soil) 6. Secondary Funding 4		4	4.17	4.2	4. Shared Use Opportunity		4	4.17	4.2		
Economic Criteria Total 21		21	25.00	21.9	5. Location Impacts		3	4.17	3.1		
2.2 Environmental Criteria			Overall Criteria Weighting	25.00	6. Public Acceptance an	d Use	4	4.17	4.2		
1. Aestnetic Appearance 4		4	2.27	2.3	Community Criteria Tot	al ting Bothway	23			23.96	
2. vvater 3 <u>Consumption/Conservation</u> 3 <u>3. Flood / storm Impact on</u>		2.27	1.7	2.4 Management & Sporting Pathway Criteria		1			25.00		
Projects Sustainability 4		2.27	2.3	1. Management Model/Governance Structure		4	5.00	5.0			
4. Waterway and Drainage Impacts 3 5. Geotech / Civil Pavement Likely		2.27	1.7	and Strategies		4	5.00	5.0			
5. Geotech / Civil Pavement Likely 4		2.27	2.3	3. Business Case Sustai	nability	2	5.00	2.5			
 Environmen Subsoil 	tai Conditions of	4	2.27	2.3	4. Meets Participation P	athways	3	5.00	3.8		
 MICROPLASTIC and Waterwavs 	s impact on Land	4	2.27	2.3	5. Facility Priorities Ach	ieved	4	5.00	5.0		
8. Maintenance Environment	Impact on the	3	2.27	1.7	Management and Sporti Total	Management and Sporting Pathways Total				21.25	
Environment 3 9. Increased Parks/Open Space 4		4	2.27	2.3	Site	Grand Total	100	89.24			



2.2. Croome Regional Sporting Complex

SPORTS SURFACE EVALUATION DIAGNOSTIC										
Part 1: Site Details Ground Name Croome Regional Exacting Complex Field Defensional										
Ground Na	ame:		Croome Regio	nal Sportir	ng Complex	Field Refer	ence:		D	
Giounu audress.			Sport Played	oau, croon	le		sport -		0	
Details:			Winter		Football / Touch		Summer	Cricket, Touch,	summer Footb	all
Description of the Facility:			Regional mult	i-sports co	mplex		1			
Maps of Sportsgrounds:				Map / Lingram or Site Map of Council Area Image / Lingram or Site Image / Lingram or Site Image / Lingram or Site Image / Lingram or Site						
fationale fo Description of challenge, per field condition) considered ar	r Consideration current challenge (e. rformance, and curre and what options are ad rationale	g. demand nt status of e being	Multi-sports comple	x, centrally loc	ated, with current onsite r	nanagement wit	h a piece of lan	d not currently being used for	active sport	
Natural Surface Upgrade Consideration for Natural Upgrade (explain why you would or would not consider an upgrade to the natural turf field initially			Possible upgrade fi	orm non-use t	o sports field. For the cost	of upgrade/dev	elopment, a full	field (synthetic) could be cons	sidered	
Hybrid Surfa Consideration you would or the natural tur Synthetic Su	for Natural Upgrade would not consider a f field initially urface Upgrade	(explain why n upgrade to	Full field wouldn't g	et Rol benefit,	but if natural field develop	ed, then a high-	wear area hyb	rid strategy should be conside	əred	
Consideration explanation as impact on othe Site Usage	for synthetic surface s to why this would be ar fields in park or nei and Economic V	upgrade and e justified and ahbourhood Vorkings	Possible synthetic r	ectangular fiel	d for training with low heig	ht lights could b	e considered			
Step 1: Ide	ntify Current & P	roposed Su	rface Type and	Optimal Us	age					
Current Surfa	ce Type & Usage-	Natural grass	(pw)	0	Proposed Surface Type	& Usage-	Synthetic	Optimal Hours (pw)	70	
VINTER: Current usage (Hours per week)	niny current Act	No # Weeks per year	seu Usage	0	WINTER: Proposed usage (Hours per week)	70	No # Weeks per year	32	2240	
SUMMER: Current usage (Hours per week)		No # Weeks per year		0	SUMMER: Proposed usage (Hours per week)	60	No # Weeks per year	20	1200	
playing per hour		Total Hours Pe	rr Year 0 No # People playing per 60		60	Total Hours Per Year		3440		
No of players per field in club	ouloto the Additi	for NSW	or Hour of Hoo	0	mhoro					
Additional ho	urs (n.a.) From propo	sed ungrade	3 440	Anticipated ca	apital cost of surface		Cost per hour	of additional usage (based on	s	58 14
Additional peo	ople hours per year w Irs p.a.)	ith proposed u	pgrade surface (Diff	upgrade in intensity of	people usage x	\$ 2,000,000 206,400	10 year life exp Cost per people on 10 year life e	hectancy/usage) /hour of additional usage (based expectancy/usage)	\$	1.03
Summar	v of Assessm	ent						,		
Assessm	ent Component	Score (/4)	Weighting	Total Wt	10 Built Footprint Encr	achment	2	2.27	17	
2 1: Economic	Criteria	30018 (/4)	Overall Criteria	Score	11. Heat and Heat Island	Jaciment	3	2.27	1.7	
1. Capital Inst	allation/Upgrade	2	Weighting	24	Considerations	al Critoria Total	22	25.00	1.7	40.75
Return On Inv 2. Additional of	estment capital cost per hour	۷	4.1/	2.1			33	20.00		16.75
of usage / pers	son e & Renovation Cost	1	4.17	1.0	2. 3. Community Criteri	a				25.00
Impact	ery Opportunity	2	4.17	2.1	1. Demand and Usage Impact		4	4.17	4.2	
5. Additional 0 Challenges to	Costs for specific the Site (e.g. cost of	1	4.17	1.0	2. mulu-purpose Surrace Capability 3. Prioritises Inclusion of Whole		2	4.17	2.1	
disposal of contaminated soil)		3	4 17	3.1	Community		3	4.17	31	
Economic Criteria Total 10		25.00	10.4	4. Shared Use Opportunity 5. Location Impacts		4	4.17	4.2		
2.2 Environmental Criteria		Overall Criteria Weighting	25.00	6. Public Acceptance an	d Use	4	4.17	4.2		
1. Aesthetic Appearance 4		4	2.27	2.3	Community Criteria Tot	al	20			20.83
2. Water 4 Consumption/Conservation 4		4	2.27	2.3	2.4 management & Spor	ung Patnway	1			25.00
3. Flood / storm Impact on 4 Projects Sustainability		2.27	2.3	1.Management Model/Governance Structure		3	5.00	3.8		
4. Waterway and Drainage Impacts 2		2.27	1.1	and Strategies	nem Poncies	4	5.00	5.0		
Impacts	tal Conditions of	2	2.27	1.1	3. Business Case Susta	nability	1	5.00	1.3	
Subsoil		2	2.27	1.1	4. Meets Participation P	athways	2	5.00	2.5	
and Waterway	s	4	2.27	2.3	5. Facility Priorities Act	ieved	4	5.00	5.0	
 Maintenance Environment 	e impact on the	2	2.27	1.1	Total	ng Pathways	14			17.50
9. Increased P Value	arks/Open Space	3	2.27	1.7	Site	Grand Total	77	67.50		



2.3. Myimbarr Community Park

Part 1: Si	te Details					ATION	DIAG			
Ground Na	me:		Myimbarr Com	munity Pa	rk	Field Refer	ence:	New Space Con	version - Optio	on 1
Ground ad	dress:						Ward		c	
Details:			Wattle Road, S Sport Played	hellharbou	r Football / Touch		Sport -	Footba	ell/Touch	
			Winter				Summer	100104		
Description of the Facility:		Multi-sport sports facility								
Maps of Sportsgrounds: Rationale for Consideration			Map / Diagram of Site Map of Council Area Image: Site of Sit							n Series
challenge, per field condition)	formance, and currer and what options are	nt status of e being	Extensive growth o the current usage	f football is plac	ing pressure on the curr	ent2 playing fie	lds, with the oth	er two fields (Rugby, AFL, Cr	icket and Athletics)	coping with
Natural Surfa	ace Upgrade									
Consideration you would or v the natural turf	for Natural Upgrade would not consider ar field initially	(explain why n upgrade to	New surface would lights	be affordable	but would only add an ad	lditional 840 ho	urs a yar to the	playing ability for an investme	ent in excess of \$1.	million, with
Hybrid Surface Upgrade Consideration for Natural Upgrade (explain why you would or would not consider an upgrade to the natural turf field initially		(explain why n upgrade to	Upgrade high-wea	r areas (goals,	lines etc.) of the Football	fields and cons	ider creating a	new football field near the 'Por	nds'	
Consideration explanation as impact on othe	for synthetic surface i to why this would be r fields in park or neig	upgrade and e justified and ghbourhood	Although two socce	r fields (Cricke	twicketuse in summer) c	ould be embrac	ed, predomina	ntly the fields are only used by	/ a couple of key clu	ubs
Site Usage a Step 1: Ider	and Economic M ntify Current & Pi	<i>Vorkings</i> roposed Su	rface Type and	Optimal Us	age					
Current Surfac	e Type & Usage-	Natural grass	Optimal Hours	25	Proposed Surface Type	& Usage-	Synthetic	Optimal Hours (pw)	70	
Step 2: Ider	ntify Current Act	ual & Propo	(pw) sed Usage							
WINTER: Current usage (Hours per week)		No # Weeks per year		0	WINTER: Proposed usage (Hours per week)	70	No # Weeks per year	32	2240	
SUMMER: Current usage (Hours per week)		No # Weeks per year		0	SUMMER: Proposed usage (Hours per week)	60	No# Weeks per year	20	1200	
playing per hour		Total Hours Pe	er Year	0	No # People playing per hour	60	Total Hours P	er Year	3440	
No of players per		Benchmark for NSW		0						
Step 3: Calo	culate the Addition	onal Cost P	er Hour of Use /	per user nu	umbers					
Additional hou	ırs (p.a.) From propo	sed upgrade	3,440	Anticipated ca upgrade	pital cost of surface	\$ 2,000,000	Cost per hour 10 year life exp	of additional usage (based on pectancy/usage)	\$	58.14
Additional peo	ple hours per year wi	ith proposed u	pgrade surface (Diff	in intensity of	people usage x	206.400	Cost per people/hour of additional usage (based		\$	1 03
additional hou	rs p.a.)						on 10 year life e	expectancy/usage)	-	1.00
Summary	y of Assessm	nent		Tatal					1	
Assessme	ent Component	Score (/4)	Weighting	Score	10. Built Footprint Encr	oachment	3	2.27	1.7	
2.1: Economic	Criteria		Overall Criteria Weighting	25.00	11. Heat and Heat Island Considerations		0	2.27	0.0	
 Capital Insta Return On Inv 	estment	2	4.17	2.1	Environment	al Criteria Total	30			17.05
2. Additional c of usage / pers	apital cost per hour	2	4.17	2.1	2. 3. Community Criteria					25.00
3. Maintenance	& Renovation Cost	2	4.17	2.1	1. Demand and Usage Impact		4	<u>4</u> 17	4.2	
4. Cost Recove	ery Opportunity	1	4.17	1.0	2. Multi-purpose Surface Capability		4	4.17	4.2	
5. Additional Costs for specific Challenges to the Site (e.g. cost of disposal of contaminated soil)		4.17	4.2	3. Prioritises Inclusion of Whole Community		2	4.17	2.1		
6. Secondary Funding 3		4.17	3.1	4. Shared Use Opportunity		2	4.17	2.1		
Economic Criteria Total 14		25.00 Overall Criteria	14.6	 Location impacts 6. Public Acceptance and Use 		2	4.17	2.1		
2.2 Environmental Criteria 1. Aesthetic Appearance 4		Weighting 2.27	2.3	Community Criteria Total		3 4.17 17		3.1	17 74	
2. Water 4		2.27	2.3	2.4 Management & Sporting Pathway				17.7		
Consumption/Conservation 3. Flood / storm Impact on 4 Particular Sustainability 4		2.27	2.3	Criteria 1.Management Model/Governance Structure		2	5.00	2.5		
Projects Sustainability 4. Waterway and Drainage Impacts 3		2.27	1.7	Structure 2. Aligned with Government Policies		3	5.00	3.8		
5. Geotech / Civil Pavement Likely 3		2.27	1.7	and Strategies 3. Business Case Sustainability		1	5.00	1.3		
Impacts 3 6. Environmental Conditions of 3		2.27	1.7	4. Meets Participation P	athways	4	5.00	5.0		
7. Microplastic	s Impact on Land	0	2.27	0.0	5. Facility Priorities Achieved		3	5.00	3.8	
and Waterways 0 8. Maintenance Impact on the 3		3	2.27	1.7	Management and Sporting Pathways Total		13			16.25
9. Increased Pa	arks/Open Space	3	2.27	1.7	Site	Grand Total	74	65.59		



2.4. Terry Reserve

SPORTS SURFACE EVALUATION DIAGNOSTIC										
Part 1: Site Details										
Ground Na	ime:		Terry Reserve			Field Refer	ence:			
Ground ad	dress:		Hughes Drive,	Albion			Ward		D	
Details:			Sport Played Football in the future					Football	- summer	
Description of the Facility:			Currently there are broader community	four full size a as well as the	nd 2 junior fields, a Pony Club	Club and open	space, this wo	uld create a new community s	ports field for use by	y the
				Map / D	iagram of Site		Map of Council	Area		
Maps of Sportsgrounds:				Storfitzed stars the store st						
Rationale for Description of challenge, per field condition) considered an	r Consideration current challenge (e. formance, and curre and what options ar ad rationale	g. demand nt status of e being	Open space, could	be converted,	if masterplanned and rea	aligned with Cro	ome Regional \$	Sporting Complex		
Natural Surfa Consideration you would or the natural turf	ace Upgrade for Natural Upgrade would not consider a f field initially	(explain why n upgrade to	Yes possible							
Hybrid Surface Upgrade Consideration for Natural Upgrade (explain why you would or would not consider an upgrade to the natural turf field initially		(explain why n upgrade to	For high-wear area	as						
Synthetic Surface Upgrade Consideration for synthetic surface upgrade and explanation as to why this would be justified and impact on other fields in park or neighbourhood		upgrade and e justified and ghbourhood	Yes as part of a du	al site strategy	(Croome & Terry Reser	ve)				
Step 1: Ider	ntify Current & P	roposed Su	rface Type and	Optimal Us	age					
Current Surfac	ce Type & Usage-	Natural grass	Optimal Hours	25	Proposed Surface Type	& Usage-	Synthetic	Optimal Hours (pw)	70	
Step 2: Ider	ntify Current Act	ual & Propo	sed Usage				•			
WINTER: Current usage (Hours per week)		No # Weeks per year		0	WINTER: Proposed usage (Hours per week)	70	No # Weeks per year	32	2240	
SUMMER: Current usage (Hours		No # Weeks per year		0	SUMMER: Proposed usage (Hours per week)	60	No # Weeks per year	20	1200	
per week)		Total Hours Pe	er Year	0	No # People playing per	60	Total Hours P	er Year	3440	
No of		Benchmark			100					
players per		for NSW		0						
Step 3: Cal	culate the Additi	onal Cost P	er Hour of Use /	per user n	umbers	,				
Additional hou	urs (p.a.) From propo	sed upgrade	3,440	upgrade	ipital cost of surface	\$ 2,000,000	10 year life exp	of additional usage (based on ectancy/usage)	\$	58.14
Additional peo	ople hours per year w	ith proposed u	pgrade surface (Diff	in intensity of	people usage x	206,400	Cost per people	/hour of additional usage (based	\$	1.03
additional hou	irs p.a.)						on 10 year life e	expectancy/usage)	-	
Summar	y of Assessm	nent		Total W/t			1			
Assessme	ent Component	Score (/4)	Weighting	Score	10. Built Footprint Encr	oachment	4	2.27	2.3	
2.1: Economic	Criteria		Weighting	25.00	Considerations		3	2.27	1.7	
Return On Inv	estment	1	4.17	1.0	Environmental Criteria Tota		32			18.18
 Additional of usage / pers 	capital cost per hour	1	4.17	1.0	2.3 Community Criteria					25.00
3. Maintenance Impact	e & Renovation Cost	2	4.17	2.1	1. Demand and Usage In	npact	4	4.17	4.2	
4. Cost Recove	ery Opportunity	2	4.17	2.1	2. Multi-purpose Surface Capability		4	4.17	4.2	
5. Additional Costs for specific Challenges to the Site (e.g. cost of 1 disposal of contaminated soil)		4.17	1.0	3. Prioritises Inclusion of Whole Community		4	4.17	4.2		
6. Secondary Funding 1		4.17	1.0	4. Shared Use Opportunity		2	4.17	2.1		
2.2 Environmental Criteria		8	25.00 Overall Criteria	8.3	5. Location impacts		4	4.17	4.2	
2.2 Environmental Criteria 1. Aesuretic Appearance 3		Weighting	25.00	6. Public Acceptance and Use		4	4.17	4.2	22.02	
2. Water 2		2.21	1.7	2.4 Management & Sporting Pathway					22.92	
Consumption/Conservation 3. Flood / storm Impact on 2 Period Storm Statistics 2		2.27	1.1	Criteria 1.Management Model/Governance			5.00	2.5	20.00	
Projects Sustainability 2 4. Waterway and Drainage Impacts 2		2.21	11	Structure 2. Aligned with Governi	ment Policies		5.00	2.0		
4. Waterway and Drainage impacts 2 5. Geotech / Civil Pavement Likely 3		2.27	1.7	and Strategies 3. Business Case Sustai	nability	2	5.00	2.5		
Impacts 3 6. Environmental Conditions of 3		2 27	17	4 Meets Participation P	athways	-	5.00	3.0		
Subsoil 7. Microplastic	s Impact on Land	У	2.21		5 Equility Priorities	loved	3	5.00	3.0	
and Waterways 8. Maintenance Impact on the		2.21	2.3	Management and Sporti	ng Pathways	1	5.00	1.3	40.75	
8. Maintenance Impact on the 2 Environment 2		2.27	1.1	Total		11			13.75	
9. Increased Parks/Open Space 4 Value		4	2.27	2.3	Site	Grand Total	73	63.18		

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