



Artificial Grass For Sport

Part 6 of 8

5.1 Facility Objectives

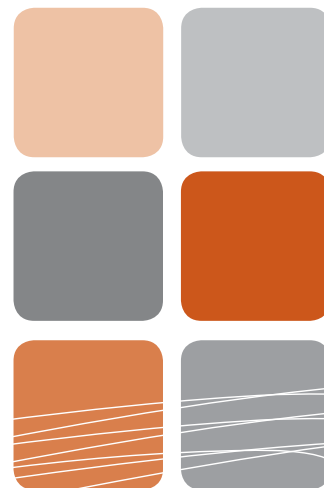
It is important in the early planning of your project to establish some broad policy positions and objectives for your planned facility. For example:

- Who is it for – elite or community level, or both?
- What should be charged – enough to cover operating expenses, or ground replacement costs as well or a percentage of same?
- Will public access be allowed?

The answers to these philosophical and policy questions provide guidance to subsequent, detailed management planning and design development matters.

Ideally management and design objectives are adopted that broaden potential access to a proposed facility, and therefore try to maximise the participation and usage possibilities of the facility. To capture these outcomes requires the thoughtful consideration of:

- The broadest possible usage.
- Low or discounted rental rates to encourage use by particular markets.
- Marketing practices that seek diverse usage.
- Design objectives that encourage thoughtful location of the facility and easy access.



5.2 Specific Policies

Section 2.2 (The Leisure Facility Planning Process) recommends a two-stage process for resolving management issues. The first is the early completion of an indicative management plan, to provide guidance to the subsequent early management and design planning, and the second phase is the development of the final, detailed management plan that will be implemented when the facility is operational.

Based on the established objectives referred to above, broad policy positions can then be established for things such as:

- Programming.
- Pricing.
- Opening hours.
- Marketing and promotions.
- Employment of staff (full time, part time and casual).
- Use of advertising.
- Public access.
- Safety (player, spectators, staff).

These types of objectives and policies are sometimes listed under headings such as:

Social

- Single purpose versus multi-purpose.
- Single user versus multi-user.
- Differential pricing.
- Equal opportunity.

Economic

- Cover operating costs only?
- Cover operating costs plus the cost of capital?
- Cover operating costs, the cost of capital, plus depreciation?

Quality

- Standards of use anticipated.
- Maintained pitch standards.
- Quality of management and service.

Environmental

- Water consumption and re-use.
- Maintenance impacts.
- Impact on open-space values, aesthetic appearance, etc.

Managerial

- Management mode and governance structure.
- Alignment with council policies and strategies.
- Business case sustainability.
- Facility priorities.

5.3 Management Options

Having established objectives for the proposed facility, and some specific draft policy statements, your project planning committee now has some guiding philosophy to help it determine which management options best suit the achievement of those objectives.

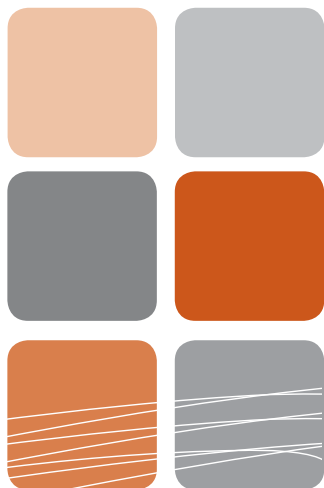
In the following section, key considerations are listed for each of the five main management options as noted. They are:

5.3.1 Direct Management By the Facility Owner

(usually the local government authority).

Key Considerations:

- Can allow the direct application of council's broader policies regarding community development, social equity, etc (refer Appendix 2: Case Studies).
- Can provide total governance control.



- Can allow centralised booking arrangements (utilising existing staff and services).
- Can mean tighter control of keys/ access.
- Allows all income to be retained by council.
- Allows consistent pricing strategy across all council-run facilities.
- Can lead to the development of stronger partnerships with schools, encouraging improved sporting 'pathways'.
- Staffing costs will rest with council.
- Can result in lack of ownership within the community.
- Staffing costs for evenings and weekends.
- Council's level of experience in operating such a facility.

5.3.2 Resident Club Control

Under this model the resident club, or the primary resident club, would control the facility via lease or similar.

Key Considerations

- Can lead to maintenance and management costs being transferred to the club and their volunteers.
- Can encourage investment by the resident club into the facility.
- Potential to provide a club income source to enable the establishment of a pitch surface replacement sinking fund.
- Gives the managing club the opportunity to fully utilise its promotion, programming and income generation skills.
- Has potential for the facility to be 'captured' by the management entity which may have no interest in generating broader community use.
- Requires a well-written lease/ service agreement that clearly defines the broader community benefits that have to be achieved by the lessees as well as standard operating information. Targets should be set regarding:
 - Breadth of sports and clubs to be utilising the facility.
 - Demographic or gender targets.
 - Amortisation fund targets.
- Ensuring prescribed maintenance Standards.

5.3.3 Representative Advisory Body Under Council Management

An example of this management option is the representative soccer group that Whittlesea City Council (Victoria) initially established to coordinate the use of the synthetic turf soccer pitch at the Harvest Home Rd complex in Epping. The fact that there were no tenant clubs based at this facility made it far easier for this management option to be adopted.

Key Considerations

- Potential to provide ownership among local sport stakeholders to determine and manage access (requires clear guidance from Council regarding basic access guidelines and management principles).
- How will usage demands be monitored and policy adjustments be made?
- The need for the advisory body to have the skills to manage access appropriately.

5.3.4 Committees of Management

Can apply where a variety of users of the artificial grass facility are formed into a management committee, or it can be the utilisation of an existing management committee that has delegated control over a facility to which artificial grass facilities are being added.

Key Considerations

- Possibly provides greater community ownership.
- Can lead to a synergy of Council pricing across its facilities.
- Income can be controlled and maintained.
- Will required maintenance standards be maintained?
- Would the committee have the appropriate expertise regarding artificial grass and its management.

5.3.5 Third Party (Commercial)

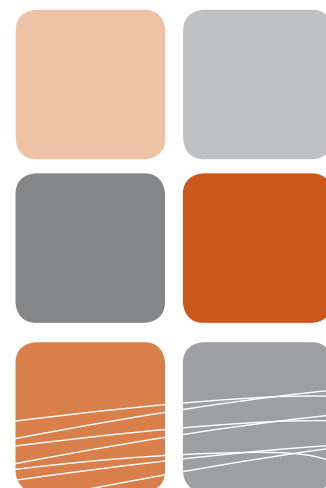
There are a number of examples emerging where local government authorities are establishing management arrangements with interested third parties. Current examples include the City of Moonee Valley placing its new artificial grass pitch (adjacent to

the East Keilor Leisure Centre) under management contract serviced by the Victorian YMCA, and the Football Federation of Victoria (FFV) managing a three-field complex at the Eastern Recreation Precinct in the City of Knox. 'Third Party' arrangements can lead to substantial capital contributions in return for extended management contracts.

Key Considerations

- Can generate a capital contribution from the third party.
- Can bring in leisure facility promotion and management expertise.
- Allows the creation of a sinking fund for field surface replacement.

- Provides a neutral party not directly linked to any club or sport.
- Maintenance requirements may not be adequately addressed.
- The extent of direct Council control.
- Cost.
- Could be driven by market forces unless the specification and contract clearly define specific market segments to be attracted.



5.4 Programming and Pricing Structures

The early establishment of both project and facility draft objectives and policy statements give clear guidance to subsequent decision making for matters such as programming and pricing. Items to be considered include:

5.4.1 Programming

- Is the facility to cater for a variety of sports and clubs, a single sports club, or a single sport with a number of sharing clubs?
- What are the attitudes and protocols of the parent bodies of the key sports that will be playing at the venue? Will they allow alternate fixturing that will fully utilise the extended availability of artificial grass?
- Are there any likely statutory planning issues that might limit the availability of the venue?
- What off peak business might be found for the facility, i.e. the daytime schools market, Friday night junior sport, Monday night veterans?

Top Tip

In the earliest planning phases, establish indicative weekly schedules (i.e. one for a typical week in winter, one in summer). This will give you a feel for the level of demand, establish the gaps to be filled, and will identify matters such as the type of carpet required, storage requirements, etc.

Top Tip

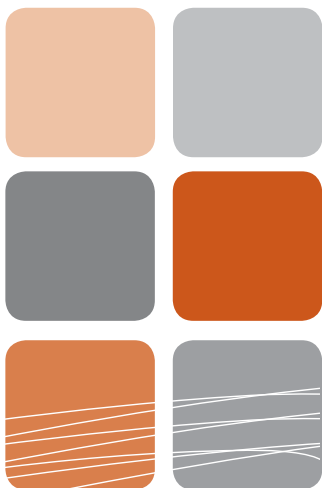
There are examples in place of larger artificial grass fields being sub-divided into smaller activity areas so that the field can provide two, three, four activity spaces at the same time. Examples include small-side soccer training areas and multi-court tennis installations. There are certain key design elements required to make this work – see Sections 1.6.11, 1.7, 3.11, 3.13, 3.15, and 3.18.

Pricing

Pricing is directly related to the earlier establishment of a proposed facility's objectives and general policies. Is the facility there to enhance community development, (targeting groups that traditionally have low participation rates), or is it a commercial or semi-commercial user pays facility?

Depending on the facility owner's stance on these questions, the following issues will find their own cost settings:

- **Cost recovery:** Will the facility just need to cover a percentage of its operating costs (i.e. as per most leased/rented natural turf sporting facilities), or will the hourly hire rate need to incorporate a substantial contribution towards a 'sinking fund' for the facility?
- **Targeted discounts:** Off-peak users will generally pay a lower fee anyway, but will fees for groups such



as school classes be set at levels to maximise access and participation.

- Co-tenant contributions: Is it possible to find a co-tenant(s) i.e. a school, an ex-students association, supportive commercial business or similar, with the capacity to pay an up-front lump-sum contribution in lieu of, say, the first five years rent? Such a deal can be extremely beneficial in helping reduce initial borrowings, or may help provide the cash for an improved initial level of facility.
- The change-over period when first moving from natural turf to synthetic turf involves a significant cost shift. Suddenly members may be responsible for their usual membership fees, plus the cost of artificial grass access. Clubs need to determine whether to leave annual fees at the same general level, and charge a special access fee each time their members train or play on the expensive artificial grass, or add together the traditional annual

membership with an aggregated lump sum to cover the member's artificial grass field usage as well.

- Consider differentiated pricing for different times of the day, i.e. when floodlighting is provided, or when a field might need to be watered pre-match.

Top Tip

People understand the principle of paying a fair market rate for access to facilities/programs such as a squash court, a tennis lesson or an aerobics class. Despite the fact that it imposes an additional administrative burden, in the initial stages you may wish to consider a per-access payment charge (in addition to their usual annual membership fee) than an all-inclusive aggregated membership/field access fee. The per-access playing fee is a gentler introduction to the world of full user-pays.

5.5 Staff and Supervision

There is a significant difference in the workload associated with running a simple 'pick up the key at the local milk bar' arrangement, as opposed to the fully supervised level of management. How you weigh up your management decision might depend on the level of debt-servicing or amortisation associated with the facility, and your club's capacity for volunteerism and the club's ambitions.

Issues to be considered:

- Opening and closing times: How will it be done? Who will do it? If in an isolated location, or if it will be dark when closing up, will volunteers be safe closing-up on their own?
- Access to changerooms and toilets: Is this a requirement of council, the parent sporting body, or just good practice? How will it be done?
- Kiosk opening hours: Opportunity to generate additional income, or demanding drain on volunteer's time? Choosing your level of service here depends on many issues including ability to pay staff and find volunteers, and sometimes the rules and expectations of users or parent sporting bodies.

- Daytime supervision: Can you just provide local schools with their own sets of keys?
- Weekly maintenance: Who will clean and groom the field or courts each week? Who will inspect them for seam stability? Who will inspect and maintain the pavilion, court or field, fixtures, etc.
- Cleaning: Dependant on your facility's scale of operation, how or who will undertake daily or weekly cleaning duties?
- Volunteers: Overall rates of volunteering in Victoria remain high, but the way in which people volunteer is changing (younger people in particular). Organisations need to study these trends and develop strategies around them.



Rugby scrum practice area (Auckland)

5.6 Marketing

Your organisation should think about its position in relation to:

- **Promotion:** How will you promote the usage of your facility (field, courts, pavilion)? Are you subject to any local council regulations related to advertising and signage?
- **Media:** How will you service your relationship with local media?
- **Sponsorships:** Refer comments under 'Promotion' re: local government regulations related to advertising.
- **Special programs:** Are there opportunities to use your facilities through smart programming such as lawn bowling 'barefoot bowls' and promotional activities for businesses?

5.7 Accounting and Financial Procedures

The advent of artificial grass for sport has substantially shifted playing field costs from mainly recurrent costs to large capital expenditure every 7-12 years. The timing of these substantial costs can be planned for, as part of a lifecycle of annual or incremental maintenance and capital replacement.

Some facility managers are passing responsibility for this liability onto the user groups, so it is prudent that these

groups establish separate accounts that clearly demonstrate the necessary annual response to that liability.

If done in this manner, members can appreciate the linkage between the user fees that they are paying (refer Section 5.4) and either the savings fund that is accumulating funds towards the next re-surfacing, or the debt that is being paid on the current surface.

5.8 Operating Procedures

Squeezing an extra year or two of playable life out of an artificial grass playing area can lead to substantial additional income generation. Some of the strategies to consider are:

Take the pressure away from high-wear zones

Particularly on full-sized fields, areas can be designed and constructed (separate colour lines, good storage and floodlighting provision) that allow for specialised training activities to take place away from the main goal areas, etc.

Having access to mobile goal posts also allows an easy relocation of training drills to other areas of the field.

Footwear issues

The correct footwear must be clearly stipulated and monitored, and all participants entering onto the artificial grass should do so via a single entry point or other such mechanism that encourages them to clean the soles of their shoes of dirt, stones, or other contaminants.

Access from car park and changerooms

Even prior to participants having to clean their shoes, it is important to consider how they will get from their car to the changerooms, the changerooms to the pitch, or their car direct to the pitch. Can the natural inclination to take a direct

course from 'A' to 'B' be aligned with the provision of sealed, clean pathways?

Opening and closing

Established procedures are necessary at opening and closing times so as to ensure:

- Appropriate risk management protocols (inspection of the pitch, court dug-outs, changerooms, etc) are performed.
- The facilities are ready for use (floodlights turned on, first-aid kit in place, etc).
- The security of the facility is checked.
- Lights, heaters, other electrical appliances are turned off where required.
- The safety of volunteers and staff leaving the facility at night is assured.

Maintenance inspections

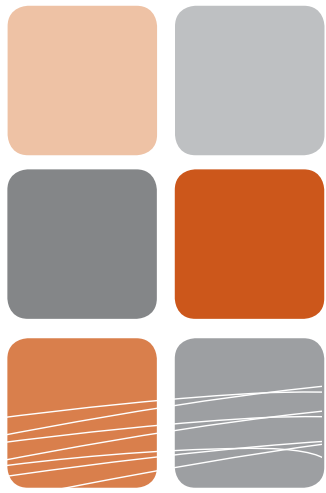
Procedures should be in place for weekly inspections such as sand and rubber infill being correctly distributed – especially in areas of high wear and tear.

Other monitoring

Maintaining a usage logbook:

- Is important in terms of indicating when major maintenance is required, as well as providing important usage data that might be relevant to a warranty or guarantee issue.





Seek player feedback:

- Maybe a suggestion box or some other more formal feedback process that allows the facility managers to be constantly aware of the cleanliness of the facility, its playability (player and field traction, ball and field interaction), and so on.

Repairs:

- Procedures need to be in place regarding response to seam failure, spillage on the artificial grass (eg. blood, first-aid medications, and burn marks).



East's Hockey Centre - Brisbane

6.1 Maintenance Overview

Maintenance processes will differ between surface types but the basic principles and objectives are the same:

- Inspect the surfaces regularly for safety, and signs of wear.
- Remove detritus from the surface.
- Apply treatments to reduce or impede the growth of plant life.
- Clean and power wash the surface to remove plant life, dirt and other contamination.
- Re-distribute infill material in the surface (i.e. rubber granules, sand, artificial clay).
- Repair broken elements of the surface.
- Ensure that equipment such as goals and netting is safe and in good working order.

There are different types of maintenance that can be carried out on the surface, ranging from routine cleaning and brushing to more advanced treatments requiring specialist equipment and chemicals. Simple routine maintenance can be conducted by the ground staff but more advanced procedures are often undertaken by specialist companies with advanced equipment which can prolong the life of an ageing facility.

In this section are specialist maintenance considerations for:

- 6.1)** Artificial grass pitches.
- 6.2)** Artificial grass (sand-filled) tennis courts.
- 6.3)** Artificial grass cricket pitches.
- 6.4)** Artificial grass lawn bowling greens.



6.2 Maintenance of Artificial Grass Pitches

6.2.1 Introduction

Synthetic turf pitches are generally hard-wearing, however to ensure that the surface continues to meet the specific performance requirements throughout the pitch's life, maintenance is essential.

The primary aim of this maintenance is to keep the artificial grass surface and surrounds as clean and free of litter, spoil and the build-up of airborne contaminants as possible. The other important aspect of maintenance is the grooming and regulation of the infill material and the inspection and attention to any failure and opening up of the seam or joints.

Such maintenance is critical if the surface is to achieve its optimum performance, and life. The installer's guarantee or warranty will usually be conditional on the recommended maintenance requirements being carried out with reasonable diligence and recorded properly for auditing.

6.2.2 What Maintenance and Why?

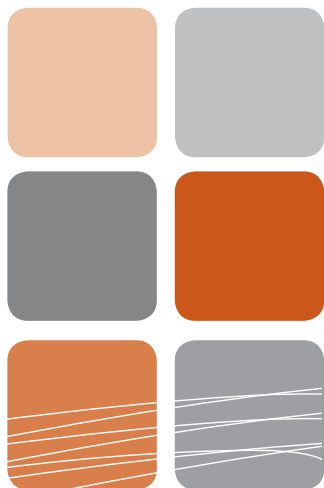
Maintenance procedures are designed to ensure that:

- The playing surface is kept scrupulously clean and the infill topped up to the required level.
- The playing surface remains level and of consistent texture so that it gives a true and predictable game.
- The effective drainage of surface water is maintained throughout the life of the pitch.

- The facility looks attractive and well-kept at all times.
- The specific performance requirements continue to be met.
- The playing surface does not become slippery due to the growth of algae and moss, or harder through compaction of the infill.
- The optimum service life is achieved from the installed surface.

These objectives are achieved by:

- Regular inspections.
- Sweeping leaves and other detritus from the surface.
- Grooming the surface through brushing and/or drag matting. Grooming lifts the fibres at the surface, redistributes evenly any sand or rubber that has been disturbed, and counteracts compaction of the sand and any tendency to form an impervious surface skin that might impair drainage (filled surfaces only).
- Applying prophylactic treatments of moss-killer and/or algaecide.
- Power washing to remove algal growth. Extraction is also required to ensure that the residue does not flow back into the carpet (unfilled surfaces only).
- Any joint or seam failure is repaired and reinstated promptly before loss of any synthetic surface pile or risk to users.

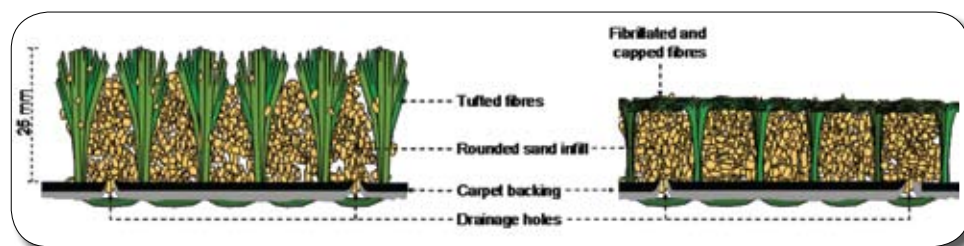


Note: the recommendations of the carpet installer or supplier should always be followed otherwise the manufacturer's warranty may be affected and potentially voided. Seek particular advice if you are contemplating the 'power washing' option, because the force of water application is potentially damaging to the seams and carpet. Appropriate training in maintenance of the system should be provided by the contractor prior to completion and handover.

SAPCA²¹ research into 'best practice' suggests the top three reasons for maintaining good maintenance practices are:

- To ensure even distribution of sufficient (not excess) infill.
- To minimise infill contamination.
- To ensure that the fibres stay upright.

If the surface is not maintained properly, fibres can eventually split and then fold over and 'cap' the surface (see illustration below). Should this happen, the surface will become hard and fast, traction will be diminished, and drainage reduced. The 'exposed' artificial grass fibres across the surface will also be vulnerable to faster ultra-violet degradation.



Fibrillation and Infill Confinement © Cranfield University 2008 www.cranfield.ac.uk

6.2.3 Maintenance Issues

Depending on the type of surface (unfilled, dressed or filled) the maintenance requirements will differ. Consequently, it is essential to follow the instructions provided by the carpet manufacturer and installer to ensure the correct methodology is applied. In this section a list of maintenance procedures are described which are commonly used for all types of artificial grass surfaces.

Initial maintenance (filled surfaces)

For infilled surfaces, immediately after installation of the carpet there may be a period where the infill is somewhat mobile and has not reached the full degree of compaction within the carpet pile to give its optimum performance.

Initially the surface may have a slight excess of infill material on its surface, but full penetration of the infill into the fibres of the carpet and its subsequent compaction into a uniform playing surface occurs naturally, through good initial grooming helped by rainfall and by play on the surface. This process may take up to two to three months. It may be necessary to top up specific areas of high wear such as penalty spots and short-corner areas, at regular intervals dependent on use.

During construction every effort is made to ensure even distribution of infill over the whole pitch. Experience shows,

however, that increasing the frequency of brushing in the early weeks of use is beneficial in creating the final playing surface.

If areas are found which are short of infill, it should be possible to brush the infill into them from adjacent areas of ample or surplus material, provided this is done within the first few weeks. If the under-filled areas are extensive (or do not respond to this treatment) the installer should be called in immediately to add more infill.

Conditioning surfaces

Any artificial grass surface can produce static charge. When materials are exposed to outdoor elements, over time, the grass tends to lose the ability to create or hold static in any way. To eliminate any potential for static charge or to alleviate a problem, simply condition the area with a 5 to 10% solution of fabric softener and water sprayed generously across the surface. An unscented liquid (biodegradable where possible) is recommended. Leave the materials on overnight and then rinse. You may need to repeat the application in a few weeks. Generally, after the first winter, the grass blades are grounded and can't hold a static charge due to the accumulation of materials on the blade surfaces.

²¹ SAPCA: Sport and Play Constructors Association (U.K.)

Keeping the surface clean

Leaves, tree flowers, pine needles and other detritus should not be allowed to remain on the surface for any length of time. If this does happen, they rapidly rot down forming a drainage-inhibiting skin within the surface and providing a growing-medium for algae and moss.

A wide soft broom, a rubber-tined rake or mechanical blower is suitable for removing vegetable matter and other rubbish. Better still, a mechanical leaf-sweeper or vacuum cleaner will greatly speed up the operation. The equipment should be well maintained and carefully operated to avoid contamination of, or physical damage to, the surface. Both sweepers and vacuum cleaners may tend to remove too much infill during the first few months of the life of the surface, but thereafter this should cease to be a problem. Some disturbance of the surface including the sand and/or rubber can be a positive benefit (see 'grooming' below).

The provision of litter bins, an information board outlining do's and don'ts and footwear cleaning mats or wash area will help to keep the surface clear of spoil brought on by players and users of the facility. It is strongly recommended that the pitch should be treated as a 'no smoking' area, since a dropped cigarette can melt the fibres down to the surface leaving an unsightly mark. Chewing gum should also be banned.

Grooming

Grooming the surface is a crucial operation aimed at keeping the mat and texture of the artificial grass as even and uniform as possible to prevent the deterioration of play characteristics, appearance and drainage properties. Apart from freshening up the look of the surface, the purpose of regular and fairly vigorous brushing is to prevent the formation of a compacted and impervious skin on the top of the sand or rubber bed that will inhibit drainage and encourage moss and algae. Because the bed of infill is an effective filter, it unavoidably retains any particulate matter conveyed or blown on to the pitch or carried down by rainfall. By constantly disturbing and moving the upper layers of sand or rubber, brushing and vacuuming can prevent or delay the onset of maintenance issues by several years.

Drag brushing with a wide brush with bristles of medium stiffness is valuable

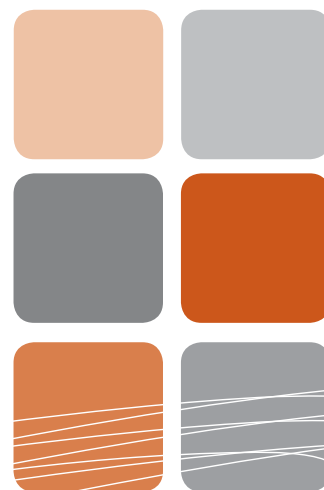
in this regard. The installer should be able to recommend or supply the correct type. There are many types on the market, with prices ranging from \$400 to \$1000. On a full-size installation it would be normal to pull the brush along with a suitable small tractor with low pressure balloon-type tyres, these typically cost in the range of \$10,000 to \$20,000. On much smaller installations the brush can be dragged manually. Brushing should ideally be done in both directions each time: up and down the length of the pitch and then at right angles across it, but if this is too time-consuming, the direction of brushing can be varied from occasion to occasion.

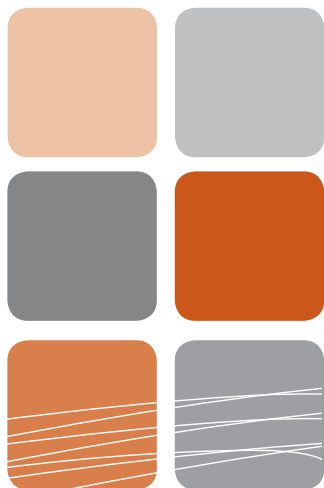
Top Tip

Following brushing (with sand-filled, and possibly sand-dressed pitches as well) it is likely that more of the infill will be visible on the surface, so consideration should be given to the timing of brushing if particular users or sports prefer less infill to be visible.

Grooming and brushing must be done to avoid any damage to the mat and pile of the artificial grass. It is essential that no damage has occurred on the meshing of the mat to avoid snagging of the surface. For fibrillated carpets, to avoid the risk of damage and to slow down the fibrillation (the splitting of the carpet fibres) of the pile, a carpet 'sock' around a steel drag mat can be used. The sock consists of a section of artificial grass material formed into a sleeve to fit the drag mat. This is used when a light re-distribution of the fill is required, without over-agitating the material and bringing it to the surface. If drag matting, with or without a sock, is regularly carried out, it is important that a frequent, deeper penetration of the upper infill layers also takes place with a drag brush or, ideally, a powered sweeper to minimise the risk of a skin or pan forming on the infill layer.

The recommended frequency of grooming must depend on the amount of use the pitch receives and whether its location is open and clean. General housekeeping and checking of infill levels in high-use areas such as penalty spots should be done once a week, but it may be advisable to brush more often if the pitch is heavily used, shaded or subject to pollution.





It cannot be overemphasised that to neglect the grooming of this kind of pitch may have serious long-term consequences even if, in the shorter term, the pitch does not appear to suffer. Grooming and cleaning need not be either time-consuming or onerous, and its benefits are profound. To omit the process may result in a pitch ceasing to drain at half-life or sooner. An ungroomed pitch will look scruffy and be susceptible to moss infestation.

The installer's advice should always be sought when considering the use of any but the lightest machines.

Power brushing

Many (but not all) manufacturers of third generation rubber-filled surfaces now recommend the use of powered brushing machines to ensure that the rubber particles remain mobile and the carpet fibres upright.

Many of the machines on the market use a contra-rotating brush, which as the machine moves forward brushes the fibres and particles forward. The equipment required can cost in the range of \$20,000 to \$40,000 AUD and may be a worthwhile investment for facilities which are heavily used or are required to be in their best condition at all times. If this is beyond the capability of owners of small facilities then there are specialist contractors offering this service. The process may be required up to four times per year but will depend upon usage and environment.

Top Tip

If using a brushing/brushing-vacuuming machine on your carpet, be careful to select the machine after receiving clear advice from your carpet supplier. Incorrectly chosen/used brushes can do more harm than good to carpet fibres, seams, etc.

Deep cleaning

Both sand filled, dressed and rubber-filled surfaces may in time require a degree of deep cleaning. The timing required for these actions will depend largely on the environment and use. Detritus, pollution and the breakdown of the carpet fibre all add to surface contamination. In time these will settle into the carpet pile and lead to hardening of the surface and a reduction in surface permeability. Usually an

owner of a facility will only be aware of the need to carry out deep cleaning when the surface begins to hold water after heavy rain. The amount and type of deep cleaning required will depend upon the type of surface contamination and how far down into the carpet pile it has reached. It may be worthwhile employing a specialist to assess this and recommend the most appropriate corrective action.

If, in spite of the regular maintenance described above, or as a result of a lack of it, the surface becomes over-compacted, clogged-up and impervious, this condition may warrant correction using specialist machinery (the advice of the supplier should be sought in this regard) to remove a proportion of the infill (containing almost all the filtered dirt) from the upper part of the carpet. This is then replaced with new or cleaned infill.

The best of these processes will improve the play characteristics, ball roll and surface/foot interaction and will prolong the useful life of the pitch by a number of years. It is essential that any scarification or very deep penetration of the surface is only carried out by experienced operatives.

Top Tip

Power washing of filled surfaces should be avoided because the action of the water on the fill can mix the contaminants through the depth of the pile and increase clogging of the through drainage.

Top Tip

Deep cleaning is best undertaken with the surface completely dry. This needs to be factored into the facility's usage and programming.

There are two basic methods which will remove contamination from within the carpet fibres. The first uses a large contra-rotating brush to tease out around 5mm of the infill material and help to brush-up the carpet fibre. The contaminated sand or rubber is vacuumed out and in some cases filtered and returned to the surface, in others it is simply returned to the surface, and if required can be removed and replaced. Typical machines necessary to undertake this type of cleaning cost around \$20,000 AUD. However there are a number of specialist companies

offering this service. This process is unlikely to be required within the first five years of the pitch's life unless flooding or other serious contamination event has occurred. However consideration should be given to carrying out this every two or three years after the end of the first five years. It has been noted however that if contaminated infill is not removed from the pitch it can prove to be a continuing problem gradually settling out further down into the carpet fibre.

The second method of deep cleaning uses proprietary machines which use either compressed air or water to force the contaminated infill from the carpet fibres, which is then removed from the surface, filtered and returned (or new infill is installed). Generally these machines remove up to 15mm of contaminated fill material. The cost of these treatments is expensive for a full-size pitch. They should be considered if severe contamination has occurred and the pitch surface permeability has reduced to a degree where the pitch is not being used after heavy rain due to surface water or the contamination, usually in the form of a slippery sludgy material, is causing the pitch to be dangerous for players.

Moss and algae prevention and removal

In certain situations and in some seasons, algae or moss can become established on the surface. Since prevention is more effective than cure, it is important to treat the affected areas of the pitch with a good proprietary moss killer and algaecide at least once a year. Some manufacturers will recommend twice a year because they are known to have minimal residual properties.

Moss is not usually found on the parts of the surface that are trafficked by play, and although it may not be essential to treat these areas it is still a wise precaution to do so. However, particular attention should be paid to perimeter and other areas that are not trafficked, especially if they are shaded by walls or buildings or are overhung by trees. Proprietary product should not be oil-based. The manufacturer's instructions should be closely followed. Some installers can supply specially formulated moss-killers.

Where moss becomes established it should be treated immediately, the application being repeated after the dead spores are removed until

eradication is complete. In the case of very severe infestation, the installer should be consulted. High air-pressure cleaning equipment is available but its use is a skilled process.

It should be emphasised that moss is only a serious problem if it is allowed to become established. An annual prophylactic application of moss-killer is an easy way of preventing this. Regular grooming and regular use of the pitch render moss an even less likely problem.

Removal of weeds

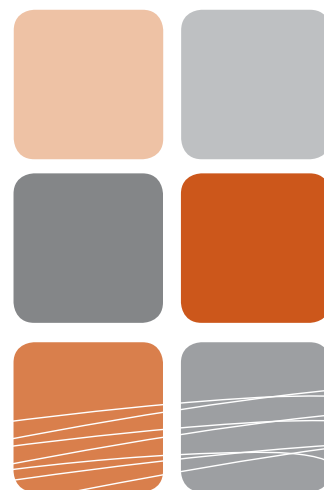
No matter how much care is taken, weeds may occasionally appear on the surface, usually as a result of wind-blown seeds. Small numbers of weeds can be removed by hand without damaging the surface. If the weeds are removed by hand, it is important to ensure that the full root of the weed is extracted, not broken off. Some weeds are more prolific if they are simply cut off at surface level. If the weeds are deep-rooted it is advisable to kill them with an appropriate weed-killer.

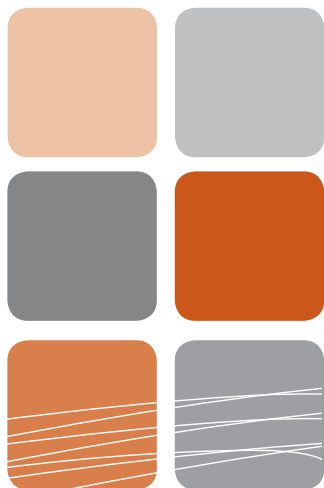
Localised areas of weed seedling infestation can be treated with domestic weed killers without causing damage to the surface of the pitch. Always check with the carpet supplier or installer to ensure the chemicals applied to the surface are acceptable and will not void the warranty. Oil-based weed-killers should not be used.

Play lines

An artificial grass pitch will normally be supplied with permanently inlaid play lines. The number of sports to be included and whether the lines are to be inlaid or painted on to the surface will be decided prior to construction. However, if additional lines are required for special events or changes in the sports being played, these can be painted onto the surface using line paint. Some of these are more effective than others and consultation with installers, suppliers and other users of artificial grass pitches is recommended. Chalk lines can be applied but these tend to leave a lasting powder spread in the area of the line. Marking compounds for natural grass should not be used because these will leave a build-up forming a crust and potential trip hazard.

Permanent lines require no special attention, other than, if cut-in, occasionally checking they are secure. This regular check should also be carried out on the seams in the carpet.





Any breakdown of the seams at lines or in the main carpet should receive immediate attention to avoid ongoing deterioration. This should be reported to the installer if within the warranty period. If the warranty has expired, a number of specialist companies will offer seam repair services. In the past seam failure has determined the service life of the facility.

Stain removal

Most stains can be removed easily with a solution of warm (not boiling) water and a household detergent such as dishwashing liquid. The removal of chewing gum can be simplified by making the gum brittle with a proprietary aerosol freezing material (then chip it away). Heavy oil marks may be removed with a cloth and white spirit used in moderation.

Dog urine will not stain the surface, but dog and rabbit droppings will need to be picked up manually because they will not break down. Dogs may also cause surface unevenness by digging and disrupting the level of the infill (although it is not anticipated that this will cause extensive or permanent damage).

Seek the advice of the manufacturer before attempting to remove heavy soiling and stubborn stains.

Top Tip

Care should be taken to ensure that all equipment that may be used on/near the surface system is free of oil and fuel leaks. All refuelling and servicing of the machinery should be remote from the installed surface.

Footwear

Suitable footwear should always be used. Most shoe manufacturers produce boots that are specifically designed for the sport played on a artificial grass pitch. Some artificial grass systems, eg. long-pile systems, are designed to take a normal soccer or rugby stud. Consideration should be given to excluding the use of bladed studs, as it has been suggested that these types of studs can increase wear on the surface. Consequently, if any doubt

exists the surface manufacturer should be consulted.

6.2.4 Daily, Weekly, Monthly, Annually

The following are minimum recommendations. Cleaning, brushing and pitch inspection can always be done more frequently, to the benefit of the surface. Common sense and careful observation should prevail. If any serious doubt exists about the effectiveness of the maintenance regime or the condition of the pitch, contact the installer immediately.

Daily – at end of the day's play:

- Check fixtures and fittings.
- Make sure gates are shut.
- Check and top-up fill levels at high-traffic areas such as penalty spots, and short corners.

Weekly:

- Clear leaves and rubbish from the area.
- Deal with any new weeds, moss or algae.
- Brush the surface of the pitch.

Monthly:

- Check infill levels (filled only).
- Outside the fence, check and clear mowing strips and check cleanliness of access paths.
- Check seams and inlaid lines, and report failures to installer.
- Check the irrigation system (if required).

Periodically (at least every six months):

- Check thoroughly for moss, algal growth, food stains, or other debris, and remedy as appropriate.
- Treat pitch with moss killer, algaecide, etc.
- Power brushing to help keep the infill mobile and the carpet fibres erect (filled only).

Annually:

- Treat pitch with moss-killer or algaecide.
- Call in installer if any aspect is causing significant concern.

Deep cleaning should only be carried out if surface contamination is suspected and then only by specialist contractors.

Top Tip

Maintenance procedures for sand-dressed and rubber-granule infilled fields are still evolving. If you are constructing a facility utilising either of these infill mediums, ask your manufacturer/supplier for a product-specific maintenance regime.

Top Tip

A crucial tip for maintaining the pitch is to do a little often, rather than neglecting maintenance procedures for months and then facing large expenses to restore the pitch to its optimum performance capabilities.

6.3 Maintenance of Artificial Grass Tennis Courts

6.3.1 Introduction

An artificial grass tennis court is basically a tufted synthetic carpet laid on a base usually constructed of concrete or asphalt (preferably porous in nature). The carpet is then usually filled with sand to occupy the space between the carpet fibres to within about 2mm of the top of the pile. The purpose of the sand is to hold the carpet in place, to provide a firm playing surface and to facilitate the drainage of surface water.

Play-lines are either tufted into the carpet (and are therefore integral with it), or are subsequently cut in using similar carpet materials of the appropriate white or yellow colour. The resulting tennis surface is permeable, hard-wearing and requires only a modest amount of maintenance. This maintenance is, nevertheless, of vital importance if the surface is to remain visually appealing, consistent in play, permeable and long-lasting. Indeed, the installer's guarantee will usually be conditional on the recommended maintenance requirements being carried out with reasonable diligence.

6.3.2 What Maintenance and Why?

Maintenance procedures are designed to ensure that:

- The playing surface is kept scrupulously clean.
- The surface is level and of consistent texture to give a true and predictable bounce.
- The free drainage of surface water is maintained throughout the life of the court.
- The tennis court will look attractive and well-kept at all times.

These objectives are achieved by:

- Sweeping leaves and other debris from the surface.
- Brooming the surface to freshen the fibres, counteracting any slight sand drift or compaction and counteracting any tendency to form an impervious skin on the sand surface that might impair drainage.
- Applying prophylactic treatments of moss-killer and/or algicide.

6.3.3 Maintenance Issues

Keeping the surface clean

Leaves, tree flowers, pine needles and other debris should not be allowed to remain on the surface for any length of time. If this does happen, they rapidly rot down forming a drainage-inhibiting skin within the surface, and provide a growing medium for algae and moss.

A wide soft broom or a rubber-tined rake is ideal for removing vegetable matter and other rubbish. A mechanical leaf-sweeper or garden vacuum cleaner will greatly speed-up the operation. The equipment should be well-maintained and carefully operated to avoid contamination of, or physical damage to, the surface. Both sweepers and vacuum cleaners may tend to remove too much sand during the first few months of the life of the surface, but thereafter this should cease to be a problem. Some disturbance of the surface of the sand may be a positive benefit (see Brooming below).

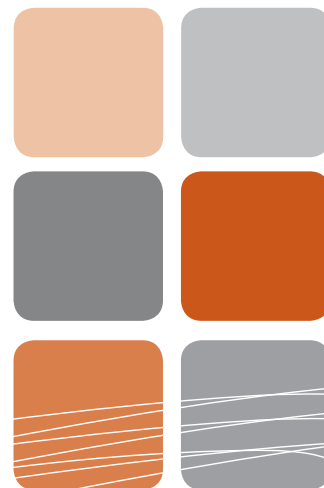
Brooming

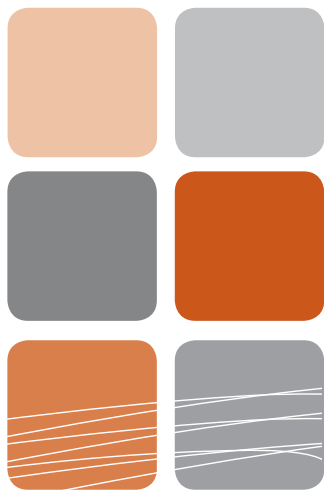
Brooming the surface is a crucial operation if premature loss of appearance and drainage is to be prevented. Apart from freshening the look of the surface, the purpose of regular and fairly vigorous brooming is to prevent the formation of a compacted and impervious skin on the top of the sand-layer which will inhibit drainage and encourage moss and algae.

A one metre wide broom with bristles of medium stiffness is best. The installer should be able to recommend or supply the correct type. It can be dragged over the surface or, better still, pushed. Brooming should ideally be done in both directions - the length of the court and then at right angles across. If this is too time-consuming, the direction of brooming can be varied from time to time.

The recommended frequency of brooming must depend on the amount of use the court receives and whether its location is open and clean. Once a month is a recommended norm, but it may be advisable to broom more often if the court is heavily used, shaded or subject to pollution.

There is a selection of mechanical brooming machines available, which will speed up and lighten the operation and these are recommended at clubs and





other venues where there are several sand-filled artificial grass courts. The machines vary in the vigour with which they broom the surface, some are rather fierce and are only recommended for use by experienced operatives and where heavy remedial brushing is needed.

Combined brush and vacuum machines must be used with even greater care because sand brushed and sucked from the surface may be very difficult to replace, especially when the court is well worn. The installer's advice should always be sought when considering the use of any but the lightest machines.

It cannot be overemphasised that to neglect the brooming of this kind of court may have serious long-term consequences even if, in the shorter-term, the court does not appear to suffer. Brooming need not be either time-consuming or onerous, and its benefits are profound. To omit the process may result in a court ceasing to drain at half-life or sooner. An un-broomed court will look scruffy and be susceptible to moss infestation.

If, in spite of the regular brushing described above, or as a result of a lack of it, the sand-filled surface becomes over-compacted and impervious, this condition can often be corrected by appropriate treatment usually involving the use of specialist machinery. Machines vary from simple scarifiers to more elaborate proprietary machines that remove a proportion of the sand from the carpet, which is then replaced with new sand. The best of these processes will prolong the useful life of the carpet by a number of years.

Moss and algae

In certain situations and in some seasons, algae or moss can become established on the court surface. Since prevention is much more effective than cure, it is important to treat the court with a good proprietary moss-killer and algaecide at least once a year.

Moss is not usually found on the part of the surface that is trafficked by play, and although it may not be essential to treat these areas it is still a wise precaution to do so. Particular attention should, however, be paid to those perimeter and other areas that are not trafficked, especially if they are shaded by walls or buildings or are overhung by trees. Particular attention should be paid to courts located in dark and wet areas that have significant tree cover. These

surroundings do not promote open air and free drying of courts and moss and algae can propagate easily in moist environments.

Proprietary product should not be oil-based. The manufacturer's instructions should be closely followed. Some installers can supply specially formulated moss-killers. Where moss becomes established it should be treated immediately, the application being repeated until the moss can be brushed and cleared away. In the case of very severe infestation, the installer should be consulted. High-pressure cleaning equipment is now available but its use is a skilled process. It should be emphasised that moss is only a serious problem if it is allowed to become established. An annual prophylactic application of moss-killer is an easy way of preventing this. Regular brooming and use of the court renders moss an even less likely problem.

The first month or two

Immediately after construction there is an initial working-in period during which the final playing surface is created. Initially the court surface will be left rather sandy, but full penetration of the sand infill into the polypropylene fibres and its subsequent compaction into a uniform playing surface occurs naturally, especially as a result of rainfall and initial play. This process usually takes two to three months.

During construction every effort is made to ensure even distribution of sand over the whole court. Experience, however, shows that increasing the frequency of brushing in the early weeks of use is beneficial in creating the final playing surface.

If areas are found which are short of sand it should be possible to brush the sand into them from adjacent areas of ample or surplus sand, provided this is done within the first few weeks. If the under-sanded areas are extensive or do not respond to this treatment, the installer should be called in immediately.

Play lines

An artificial grass court will normally be supplied with permanently in-laid playing lines. Permanent lines require no special attention.

Stain removal

Most stains can be removed easily with a solution of hot (not boiling) water and a household detergent, such as washing

up liquid. The removal of chewing gum can be simplified by using ice cubes or freezing spray to harden the gum. Heavy oil marks can be removed with a cloth and methylated spirits.

Dog urine will not stain the surface, but dog droppings will need to be picked up manually because they will not break down. Dogs may also cause surface unevenness by digging and disrupting the level of the infill (although it is not anticipated that this will cause extensive or permanent damage).

Weeds

No matter how much care is taken, weeds may occasionally appear on the surface, usually as a result of wind-blown seeds. Small numbers of weeds can be removed by hand without damaging the surface. Localised areas of weed seedling infestation can be treated with domestic weedkillers without causing damage to the surface of your court. Oil-based weedkillers should not be used.

Rejuvenation

Rejuvenation involves the removal, cleaning and replacement of the sand to assist de-compaction of the sand and to improve drainage. Generally it should be undertaken at about the half-life of the carpet. This would generally be done in the range of four to seven years after installation of a new sand-filled artificial grass surface²¹.

Footwear and general court care

Suitable footwear should always be used, i.e. good quality tennis shoes. If the court is used occasionally for other sports (eg. hockey), rubber moulded boot studs will be satisfactory. Metal studs must not be used. It is strongly recommended that the court should be treated as a 'no smoking' area because a dropped cigarette can melt the fibres down to the surface leaving an unsightly mark. Chewing gum should also be discouraged.

6.3.4 Daily, Weekly, Monthly, Annually

Daily – at end of the day's play:

- Make sure the net is slackened and rolled up in the middle – if practical.
- Make sure the gate is shut.

Weekly:

- Clear leaves and rubbish from the court.
- Deal with any new weeds, moss or algae.

Monthly:

- Broom court to redistribute sand. Check sand levels.

Periodically

(at least every six months):

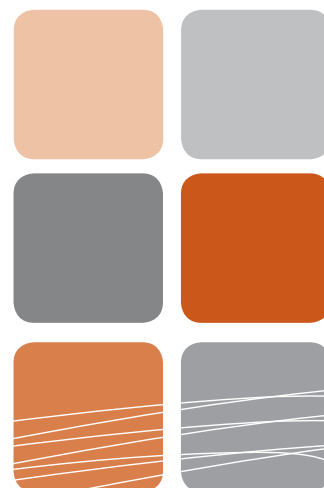
- Check for moss and algal growth, food stains, shoe marks etc. and remedy as appropriate.
- Apply grease to the net winding gear.

Annually:

- Treat court with moss-killer or algaecide.
- Call in the installer if any aspect is causing significant concern.

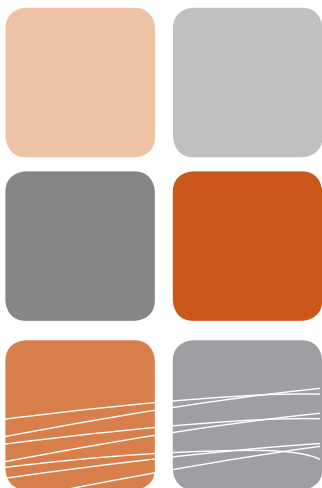
Note: These are minimum recommendations. Cleaning, brooming and court inspection can always be done more frequently. Commonsense and careful observation should prevail. If any serious doubt exists about the effectiveness of the maintenance regime or the condition of the court, call in the installer immediately.

All artificial grass suppliers and installers should supply purchasers with an owner's manual that includes a recommended maintenance regime. Following this regime will be important in meeting your warranty obligations. Always seek the manufacturer's advice prior to undertaking major cleaning and/or rejuvenation works.



Artificial Clay Infill

²¹ Tennis Australia Information Sheet – Sand Filled Artificial Grass Surface, 2003



6.4 Maintenance of Artificial Grass Cricket Pitches

6.4.1 Introduction

Artificial grass cricket pitches are normally constructed by installing a short pile, high-density artificial grass carpet over a concrete base, sometimes with the addition of a cushioning layer (bowlers' shock pad) under the carpet from the popping crease back to the start of the concrete slab.

The carpet is normally within the range of 9-11 mm fibre height.

6.4.2 What Maintenance and Why?

In order to get the most out of an artificial cricket pitch there is a certain amount of initial and routine maintenance that needs to be carried out. Adhering to this maintenance will help to extend the useful life of the facility while ensuring the best possible performance of the surface. If maintenance is not carried out then the life and performance of the pitch will deteriorate.

Maintenance procedures are designed to ensure that:

- The surface is kept scrupulously clean.
- The surface is safe for all standards of user.
- Moss and algae are not allowed to grow on the surface.
- The pitch achieves its intended lifespan.

These objectives are achieved by:

- Sweeping leaves and other detritus from the surface.
- Applying prophylactic treatments of moss killer and algaecide.
- Washing if required.
- Removing weed and grass growth from the periphery.
- Cutting the perimeter grass.
- Repairing the surface.

6.4.3 Maintenance Issues

Keeping the surface clean

Leaves, pine needles, grass clippings and other debris should not be allowed to remain on the pitch for any length of time. If this does happen they will rapidly rot down and encourage the growth of moss and algae, resulting in a slippery and dangerous surface, which will also affect performance. Therefore the pitch should be swept regularly by hand brushing with a stiff broom. Stains or discolouration can be washed from

the surface with a hose or high-pressure washer if required.

Stain removal

Most stains can be removed easily with a solution of hot (not boiling) water and a household detergent, such as washing up liquid. The removal of chewing gum can be simplified by using ice cubes to harden the gum. Heavy oil marks can be removed with a cloth and methylated spirits.

Dog urine will not stain the surface, but dog droppings will need to be picked up manually because they will not break down.

Moss and algae

In certain situations moss and algae can become established on the surface carpet. Since prevention is better than cure it is important to treat the surface with a good proprietary non oil-based, moss-killer and algaecide once per year. If moss is already established, then the resulting dead moss should be brushed from the surface with a stiff broom.

Crease markings

The crease lines should be re-marked regularly with the paint which has been recommended by the supplier of the pitch or surface.

Pitch perimeter

Grass growing at the perimeter of the pitch needs to be properly maintained. Ideally it should be cut with a cylinder mower, with the intention of keeping clippings and dust away from the pitch surface.

Footwear

Cricket boots with metal studs or spikes should not be worn on an artificial grass pitch because the spikes could rip the carpet. The footing of any player wearing spiked shoes would also be compromised because the spikes might grip the surface too firmly and not allow free movement across the surface. To minimise the wear and tear, wear multi rubber-studded boots.

Stump areas

Some artificial cricket pitches will have an area of clay or soil around the stumps so proper stumps can be used instead of portable ones. The clay or soil should be worked around with your heel to re-firm it, adding a little water if necessary to soften it.

Surface repair

Depending on the amount of use per

year, after a number of years, the carpet may show signs of fraying in high-wear areas such as the bowler's delivery area and where the batsman takes block. Any such areas should be given immediate attention by applying a suitable adhesive to bind together any loose fibres (consult the supplier or installer of your pitch). If this work is not carried out then it will be necessary to patch the surface with a new strip of artificial grass. The supplier or installer of the pitch should be able to provide instruction on how this is best carried out.

Note: It is important that no repairs to the surface are carried out in areas where a ball is likely to pitch, as it could cause a dangerous bounce.

6.4.4 Daily, Weekly, Monthly, Annually

The following schedule may vary dependent on the specific instructions

provided by the carpet system installer.

Daily – before each match:

- Brush to remove debris.
- Re-mark if needed.

Weekly – throughout the season:

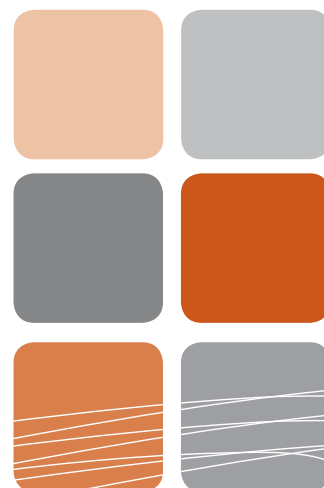
- Brush to remove debris.
- Mow the perimeter to the pitch.

Monthly:

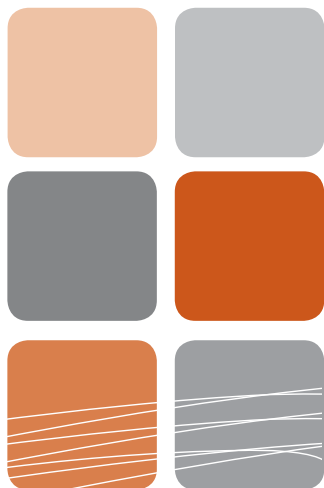
- Deal with any moss, algae or weeds.
- Repair any areas of frayed carpet.

Annually:

- Carry out pre-season uncovering and cleaning.
- Apply moss and algae treatment if needed.
- Patch any damaged areas if required.



Cricket practice facilities, Kuranjang Reserve, Melton



6.5 Maintenance of Artificial Grass Lawn Bowling Greens

6.5.1 Introduction

This section on the maintenance of lawn bowls synthetic surfaces has been written based on information from various websites, and with specific advice provided by industry sources. From this review it is clear that there are differences of opinion/emphasis about certain maintenance processes. It is therefore emphasised that the information provided below is of a general nature only. Specific maintenance plans for specific greens should be developed through ongoing liaison with the manufacturer or installer of each green.

Maintenance requirements for lawn bowls synthetic surfaces are much reduced in comparison with natural turf greens, mainly revolving around keeping the surface dirt and dust free, which, if not done, can lead to the surface becoming hard and fast and the natural drainage through the surface system getting clogged and slowing down.

As described in Section 1.5.2 of this guide, there are three different types of lawn bowls synthetic surfaces, tufted (partially sand-filled), and two non-filled products: woven and needle-punched. Given that, Section 6.5.3 (Maintenance Issues) that follows will be structured as per:

- a) Generic Issues.
- b) Specific advice related to tufted carpets.
- c) Specific advice related to woven and needle-punch carpets.

6.5.2 What Maintenance and Why?

The playing characteristics required of a bowls surface relate to issues such as flatness, rolling speed, sand levels (where appropriate), vertical drainage capacity, etc. All of these elements are dependant on good maintenance practices.

While the impact time and the labour costs associated with the maintenance of natural turf greens have become too prohibitive for many bowls clubs, it is incorrect for them to anticipate that lawn bowls synthetic surfaces are going to be maintenance free.

Maintaining high-quality playability and maximising the lifespan of such facilities requires a full understanding of and ongoing commitment to necessary,

continual maintenance practices.

6.5.3 Maintenance Issues

a) Generic issues

The general principles of maintenance of bowling greens are the same as for all synthetic surfaces. However the game of bowls requires an extremely level and smooth playing surface and maintenance should only be undertaken by trained and knowledgeable staff. The advice and instructions of bowls synthetic surface suppliers should be sought before undertaking maintenance on a bowling green. Having said that, the following generic information contributes towards a checklist of issues and ideas to pay attention to:

Prevention

Remember that maintaining a synthetic grass surface begins long before the laying of the surface. It begins at the time of planning, design and construction.

It is imperative that a geotechnical soil test be conducted as a pre-requisite for installing a synthetic surface.

- Design your installation to be free of total shade spots.
- Always plan for the heaviest possible rainfall and be aware of any situation that could result in water running onto your green.
- Ensure retaining walls have their own drainage and do not let water seep onto the surface.
- The bank area where your bowlers step onto the green **MUST** be very well grassed or suitable matting or paving should be provided. This will prevent dirt or mud being carried onto your green via players' shoes.
- Remove loose matter regularly.
- Avoid unnecessary traffic on the surface.
- Ban food and smoking near the surface.
- Correct footwear must always be used (flat soled).

Settling-in period

After your new green has been constructed, be a little patient in the interests of achieving a beautiful, flat playing surface. Your members will have experienced the long settling period with natural greens – your artificial grass green will require a much shorter settling period, but will still require a little time to stabilise.

Changing rink numbers

Changing rink numbers is similar to that recommended for a grass green, ie. do it on a regular basis to facilitate even wear over the whole of the green.

Line marking

Do not force any markers through the surface into the base (eg. golf tees) the initial 2m marks can be put in place by using a small round piece of sponge dipped in water-based paint. Mark a 2m and a 5m dot, and draw a chalk line impregnated with titanium (or similar marking chalk), between the two dots in line with the number at the opposite end of the green. Alternatively a craft marker filled with water-based paint can be purchased at major hardware and office supply stores.

Rink markers

Four sets of rink markers should be sufficient. Once in place the lines can be re-marked before the lines have completely faded to avoid the need to re-measure the rinks. T-bars can be added using a wooden bar with a light cotton rope attached and when rubbed in the titanium will mark a crossbar at the 2m spot.

'Dumping' bowls

Please note that continual 'dumping' of bowls at the ends of the green may result in minor cracking of any bonded surface over time. This will then make the bonded surface more susceptible to movement during or after heavy flooding. 'Dumpers' should be coached to avoid any serious imperfections of the base layer. A bowling aid may need to be used. A 2mm imperfection will make a huge difference to the running of today's narrow bias bowls.

Influence of climate

The local climate will have a bearing on the playing characteristics of the green. This varies from club-to-club depending on wind exposure, mean temperatures and rainfall. How you groom and water will depend on the prevailing weather conditions, the settling down progress and the immediate play requirements. Good green-keeping judgment is still needed, even with synthetic grass.

Stain removal

(Refer also Section 6.6 – 'Chemicals on Artificial Grass').

- General instructions:

The first rule here is to act promptly because fresh spills are always easier to remove than dried or hardened

ones. Remove any solids with a plastic spatula. Blot up excess liquids with paper towels or a dry absorbent. Dry absorbents can then be swept or vacuumed.

- Procedure:

Polyethylene surfaces have good resistance to staining. However, the surface is only one part of a sophisticated system of components designed for overall green performance. Some cleaners safe to use on polyethylene could be harmful to other parts of the system. This means cleaning fluids should be grouped into two sets – those which can be used liberally on the surface and those which should only be applied by rubbing with a cloth soaked in the cleaner to minimise possible effect on the pad.

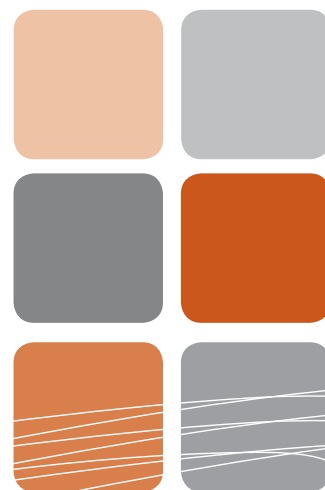
The following cleaners (first group) can be applied without any special precautions:

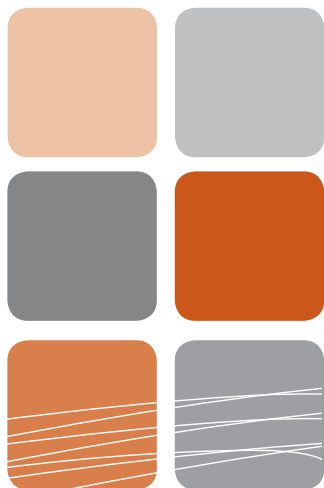
- A warm mild solution of granular household detergent in water OR a neutral low-foaming detergent recommended for delicate fabrics. Use with approximately 5 litres of water.
- Stains removed with detergent solution include: Coffee, tea, grape juice, tomato juice, cocoa, watercolour, beer, cola, milk, ice cream, tomato sauce, food colouring, mustard, margarine, butter.
- A 3% solution of ammonia should be used for more severe problems. Thoroughly flush the surface with lots of cold water afterwards.
- Clean, dry absorbents such as paper towels or 'kitty litter' for stains which can be blotted up.

The second group of cleaners includes chemicals such as pH-neutral dry cleaning fluids. These cleaners must be applied sparingly using a damp cloth or rag, with care taken to avoid penetration beneath the turf (carpet). Before using any such chemicals, clarification should be sought from a member of your installer's technical team.

Stains removed with the second group of cleaners include: asphalt, ball point ink, shoe polish, cooking oil, suntan oil, lipstick, floor wax, crayon, scuff marks, motor oil/grease and chewing gum*.

(*Chewing gum is a common hazard and can be removed by using dry cleaning fluid, ice cubes or by freezing.





Aerosol packs or refrigerant can be sourced from carpet cleaning suppliers for this purpose, or dry ice could be used).

When using such products care should be taken to ensure that the user instructions are strictly complied with. To neutralise animal waste, use a mixture of white distilled vinegar with equal amounts of water. Flush thoroughly with water after the application. If in doubt, please consult your installer for clarification. The handling and use of cleaning chemicals in general should be undertaken in strict adherence to the manufacturer's instructions.

Vandal damage

Contact your insurers and the installer immediately.

Keep a diary

As with all types of bowling greens, a diary should be kept recording all actions carried out during the life of the green. Any unusual weather events should also be recorded.

Actions which may void a warranty:

- The use of any chemicals not approved by the installer.
- Failure to clean the surface as per instructions given in the maintenance manual.
- Allowing the drainage outlet to become blocked causing lengthy saturation of the base profile (if organic contamination is allowed to persist it will create a build-up of fine dirt. This will result in reduced drainage and contribute to hardening of the surface and/or moss and algae growth. If this condition is not dealt with on a regular basis the surface will deteriorate over time and put your warranty at risk). Contamination build-up will need to be professionally removed.
- Engaging a company other than the installer, or a contractor recommended by same, to undertake repairs or maintenance of the synthetic surface or base profile.
- The use of spiked footwear or inappropriate footwear on the surface.
- Using the surface for purposes other than bowls unless granted written permission from the installer.

b) Tufted carpets

Settling-in period

Encourage maximum use during the settling-in period because usage of the carpet will help to stabilise the sand infill. After the settling-in period the bowling green surface should provide an acceptable surface speed and performance with watering (where recommended) and grooming. The installers usually conduct the first grooming, and then, from that period forward the resident club should follow their recommendations. The bowling green surface is designed to work without any heavy maintenance after the settling-in period, and it should provide the required speed and performance with minimal watering, rolling and grooming.

Rolling

Rolling of synthetic bowling green surfaces should not usually be done by the club without express approval of the installer and then only under the installer's strict instructions.

Maintaining the sand level

The initial sand levels will be a little high because the green is slightly over-filled to allow the sand to settle with watering, rain and playing. Your sand level will probably drop about 2 or 3mm below the fibre tips and that is approximately where it should be maintained. The installer should return to inspect the surface to determine if the sand needs removal or topping up, and to provide any further advice.

Be aware that lowering the sand levels excessively will slow the green speed and make it difficult to maintain an even speed. Once the right sand level has been achieved, aim for a target speed of 13-15 seconds by balancing watering and grooming.

Post installation green speed adjustment

After a few months of play the ends of the green will show signs of trafficking and the green speed may increase over time. Brushing with a static brush every month will lift the fibres and reduce the green speed.

Grooming

Grooming (brushing) is to open and clean the pile; again follow the installer's recommendations.

Where available a converted reel mower can be used, utilising a fitted brush

instead of the cutting blade. The brush would nominally be set at a 2-3mm penetration level. Undertake monthly.

After grooming, the sand near the surface could be a little loose and the green will play slower. At this stage, a watering cycle will help to settle and consolidate the surface sand and the speed will generally increase.

Watering (sand infill)

A feature of synthetic greens is a possible reduction in green speed during hot weather when the sand infill dries out and becomes a little loose. Watering (where recommended) prior to play will minimise this effect, but drying out during the course of the day could result in a slower green speed at the end of the day. The timing and degree of watering can only be determined by local experience, something which may take time to acquire. Watering the green during the day may be an option and certainly assists in keeping the green cool. On some of the older greens the speed increases when they dry out. Excess watering should be avoided. If the green is not kept clean of plant matter, excess watering will promote algal growth.

Sub-grade watering

Do not allow the sub grade to dry out during periods of drought. Failure to monitor the moisture content may result in shrinkage of the sub grade causing differential movement. Installers cannot necessarily be held responsible for any reactive movement caused by inclement weather. During periods of extended dry weather periodic irrigation may be beneficial. Moss and algae can quickly become a problem if regular grooming and antibacterial spraying of the surface is not carried out. The surface can be completed in sections if time is not available to complete the task in one day.

Removing plant matter

Tree debris is the most common mess maker. Leaves, pine needles, fruit and seeds can block your drainage system or lead to algal growth.

There are three methods of removal:

- Leaf rake - hard work but is an effective cleaning method.
- Leaf collecting devices, such as the outdoor vacuum cleaners. You may have to use a leaf rake in the corners and along the edges.
- Mechanical blowers will blow all leaves to one side of the green

making it necessary to sweep along one side with a leaf rake. If the blower is used too close to the surface it may have a tendency to blow sand out.

Algae and moss removal

(refer Section 6.6)

If you remove vegetation you will dramatically minimise the chance of algae forming. However, given the right environment, algae will grow on bare bitumen. If little black spots appear, immediately treat the whole green. Otherwise, each quarter, use an antibacterial spray to prevent any fungal growth. Treat the surface with algaecides, herbicides if required.

New surfaces (tufted surfaces only) should require only occasional brooming when signs of fibre compaction become noticeable on the ends of the green. A very stiff static brush bolted to a stable framework should be towed behind a ride-on mower for approximately two to four hours every three months or as required. If moss or algae becomes a problem, or if volunteers are not available to apply the quarterly application of algaecide, refer the issue to your installation company. A special cleaning service can be provided.

There are a range of commercial products you can use for algae and moss removal, but check with the carpet manufacturer before selecting your products.

Seam failure

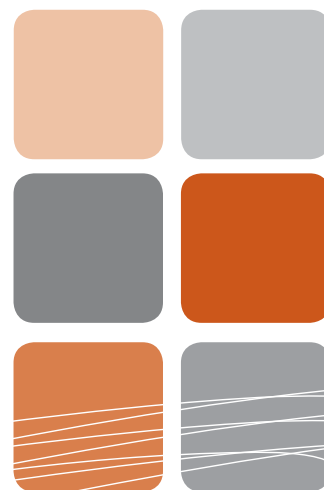
Problems with seams should be reported to your installer immediately. Any concerns over the quality of a seam, or change to seam appearance should be highlighted to your installer. Repair work covered by warranty should be carried out free of charge. Other works are likely to be billed to the client.

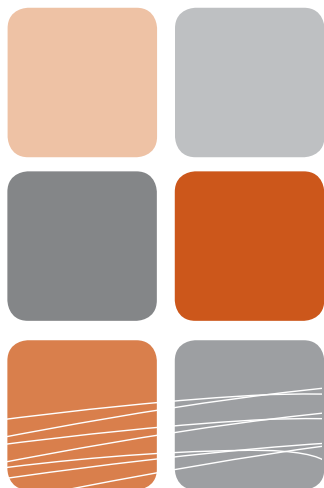
c) Woven and needle-punch carpets

Post installation green speed adjustment

After a winter installation the green speed of the surface can drop back slightly during the first weeks of warmer summer months. Needle-punch carpets are even more variable, with the green speed of a needle-punch quite easily affected by weather conditions and the level of sunlight.

If the green speed on a woven green





drops below 14 seconds when timed with a stopwatch contact the installer and report the change. If the surface continues to experience a reduced green speed after approximately four weeks, again contact the installer and have the surface re-tensioned to approximately 15 seconds. It should be noted that a surface that is over tensioned during hot weather will experience much quicker green speed during the winter months.

Rolling

Roll only if really necessary, in the direction of the seams but only on the advice of the installer.

Vacuuuming

New surfaces will require vacuuming from the date of installation. Under no circumstances should vacuum cleaners with circular or rotating brushes be used on the green surface, because this might damage your surface in the long-term.

Algaecides and herbicides

Treat the surface with algaecides regularly (three to four times a year). Herbicides as required. Many installation companies offer chemical spraying as a specialised service option.

Shampooing of the surface

Many installation companies offer a complete shampoo and cleaning service which should be considered on an annual basis if the club is unable to shampoo the surface itself.

Line marking

Do not use any wax or oil-based products to mark the green. Four sets of rink markers should be sufficient. Once in place the lines can be remarked before the lines have completely faded to avoid the need to re measure the rinks. T-bars can be added using a wooden bar with a light cotton rope attached and when rubbed in the titanium will mark a crossbar at the 2m spot.

Watering

Do not allow the sub-base to dry out during periods of drought. Failure to monitor the moisture content may result in shrinkage of the sub-base causing differential movement. Installers will deny responsibility for any reactive movement caused by inclement weather. During periods of extended dry weather periodic irrigation may be beneficial.

Retensioning

During the first 12 months the new surface may require re tensioning (the

line markings will move in the direction of the side ditches). To avoid unwanted lines you may wish to use a short-term marking product.

After the first 12 months, the surface should seldom need re-tensioning. However, if for any reason the green speed noticeably reduces contact the installation company for advice.

Repairs to stitching

Should any gaps appear in the stitched seams during the first 12 months the installation company should attend to the stitching under warranty. They should also supply a suitable repair kit to allow the club to repair the stitching in-house if required.

Repairs after the warranty period will generally attract a service fee.

6.5.4 Weekly, Quarterly and Annually

Weekly

Use a garden blower on the surface to blow clear debris, leaves and stones etc. The blower can move the debris into the ditch, and from there it can be removed with a vacuum option.

Do not use the blower on suction mode because contact with the surface in this mode can result in disturbance of the base materials.

Regular vacuuming is essential to avoid the green becoming contaminated and non-porous over time. The vacuum is to clean the fibres of the artificial grass carpet and should be likened to cleaning the carpet in your home; it is to remove the dust and particles that get trapped in the fibre and small loose surface contaminants.

- Vacuum surface using a machine approved by the installer.
- Never use the suction pipe to directly contact the surface – always ensure that the supplied elongated head is affixed to your vacuum.
- The vacuum can also be used when the green is wet or damp; this is recommended on an occasional basis, particularly after heavy rain when the surface is quite wet.
- The vacuum is not a general cleaner of twigs, flowers and leaves etc; it is to help in the porosity and cleanliness of the carpet.
- It is important that the vacuum is always in motion and not stationary while in operation.

- Installers do not recommend the use of machines with a brush or mechanical means to clean the green because it will pill the surface over time.

Moss and algae can quickly become a problem if regular vacuuming of the surface is not carried out. The surface can be completed in sections if time is not available to complete the task in one day.

Quarterly

If the installer agrees that it is necessary, roll the surface slowly in the same direction as the seams using a lightweight sidewinder greens roller. This rolling will even out any variations in tension that may develop over time with heavy rain or large variations of temperature. Care should be taken to ensure the roller is clean and in good mechanical condition. Rolling is not always necessary after the bedding-in period, bowls performance will be the indicator.

Use an antibacterial spray to prevent any fungal growth. Spray with a penetrant type wetting agent to help maintain infiltration rates.

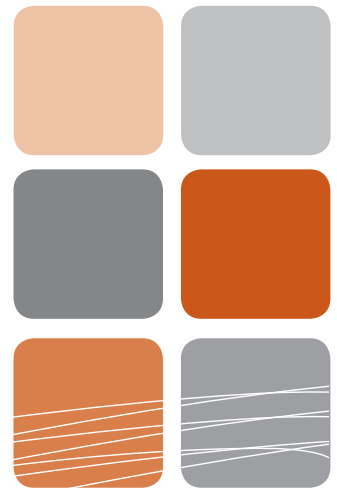
Annually

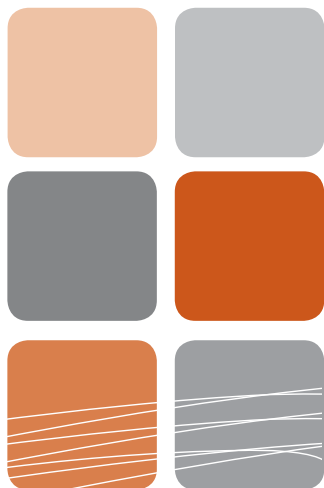
Using a hose, pre-soak playing surface, apply a proprietary low-foam antibacterial cleaning solution. Apply using a hand pump pressure sprayer (gardener type), or any suitable greens spraying equipment. Cover the entire playing surface and allow soaking in for one-two hours.

The hand-held nozzle of a wet/dry machine can be used to remove excess water and dirt residue. The above process should take a minimum of eight hours to complete for a full-size green, 37m x 37m.

If moss or algae becomes a problem, refer to your installation company representative. A special cleaning service might be necessary.

To achieve consistently high levels of performance from your woven surface you require a machine that can handle all the debris that lands on the surface daily. Fine dust builds up in the fibre very quickly and only regular vacuuming and preventative sprays of an approved product will prevent contamination build-up and fungal growth.





6.6 Chemicals on Artificial Grass

There is no easy answer as to which chemicals may be used on artificial grass to treat weeds and moss, or act as a cleaning agent. This is because of the vast number of differing varieties of product available.

Generally speaking any product that is acidic in nature (i.e. pH less than three) containing halogens (chlorine, bromine, etc), sulphur or nitrogen is likely to react in an undesired way. Likewise, if a product is oxidizing (such as bleach or peroxide), then this can liberate free ions of the above elements that can then form acidic species in the presence of water.

In brief:

- All products that are classed as 'non-acidic' and 'non-oxidizing' are likely to be suitable.
- Anything that contains 'halogens', 'acids' or 'sulphur' are likely to be unsuitable.
- Pesticides and weed-killers should be pH-neutral.
- Most detergents should be suitable.

If doubt exists as to the suitability of any chemical substance, the manufacturer of the carpet should always be consulted before application to the surface.

Top Tip

Use solvents sparingly and avoid penetration below the fibres.

Top Tip

Animal waste can be a problem. One recommended solution is to neutralise the waste with an equal mixture of water and white distilled vinegar.



Doncaster Hockey Centre