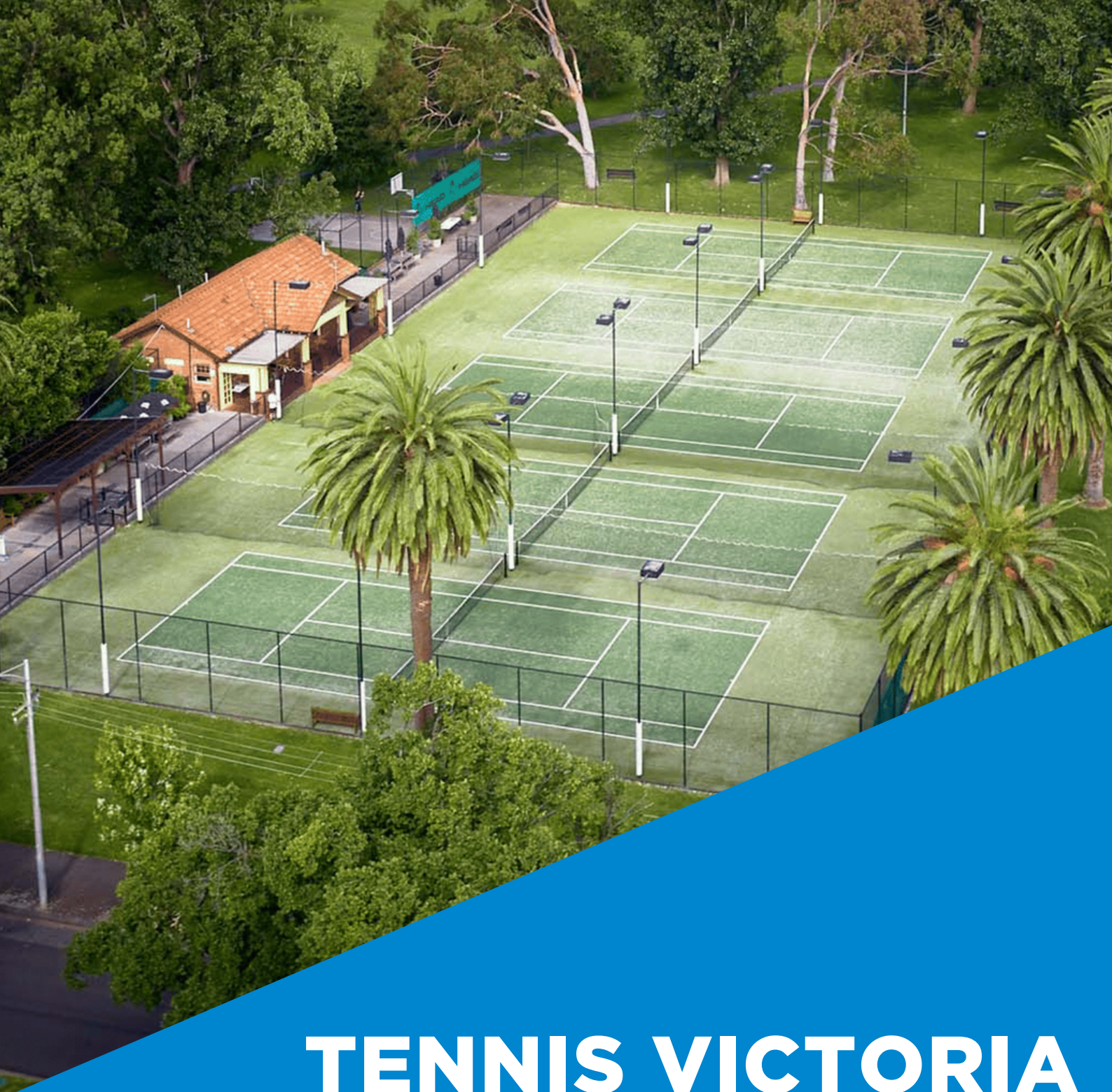

TENNIS VICTORIA

Artificial Grass Court Maintenance Guide

tennis

INTRODUCTION

Tennis Victoria produces a number of fact sheets and articles that are designed to assist tennis clubs with the maintenance and operation of their facility. The most important aspect of any tennis club (apart from the players) is the courts themselves.

This guide outlines tips and advice to keep your artificial grass courts well maintained and ready for play.

Tennis Victoria can be contacted directly for more specific facility advice by emailing tennisvicinfo@tennis.com.au.

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SAND FILLED ARTIFICIAL GRASS

Artificial grass is a popular surface choice and can provide a surface suitable for a wide range of players. The grass is generally installed over a concrete or asphalt base and filled with a washed sand, specific for tennis courts. Artificial grass can also be installed over old red porous courts or on a crushed rock base, at a lower cost. It is noted that Tennis Australia's preference is an asphalt or concrete base to ensure surface tolerances are maintained for the base lifespan and for ease of resurfacing.

Every court surface requires regular maintenance, and the ongoing management and costs should be considered before deciding on the surface. It is vital for an artificial grass court surface to be frequently groomed to ensure optimal playing characteristics are preserved, to keep the surface safe and playable and to maximise the longevity of the surface. Artificial grass that is not adequately maintained can quickly become dirty and contaminated, leading to weed, moss and algae growth and ponding, creating a slippery and unplayable surface. Not maintaining courts properly or regularly can also lead to a dramatically reduced lifespan, ongoing costly repairs and premature replacement.

The surrounding environment should also be considered when deciding on an artificial grass court surface. If the court is constructed in a damp environment with poor drainage, has dry and dusty surrounds, or with large trees positioned close to the court, it will require more frequent maintenance due to the likelihood of increased weed, moss, algae, dirt, leaf and debris removal. Asset owners/clubs need to make provision for future expenses including ongoing maintenance and the ultimate resurfacing of their surface to keep the courts playing at their best.

It is wise to request and follow the court construction contractor and/or artificial grass installers maintenance guidelines and use the products and methodology they recommend. For newly constructed courts the contractor should be able to supply this information upon request.

PLANNING

It is important to maintain a consistent and safe surface by preventing premature wearing of the artificial grass fibres and maintaining its permeability. The lifespan of the grass will be increased by adopting a proactive, regular maintenance regime, ensuring it doesn't become dirty and contaminated.

This regime includes brushing/grooming the artificial grass fibres to evenly spread the sand, to ensure the grass fibres are standing up and to remove any dirt and debris. A deep clean can also be carried out less often where the sand is removed, cleaned and distributed back into the grass fibres.

Many tennis courts receive ad-hoc reactive maintenance whereby the asset owner/club only grooms the surface once the lack of maintenance starts to negatively affect the condition and playability of the court. It is recommended that the asset owner/club regularly inspects the court surface and schedules routine maintenance performed by both club volunteers and professionals. Major maintenance should be scheduled yearly in the off season, or between seasons where clubs play all year round. It can take a considerable amount of time to seek quotes and schedule in maintenance works and therefore planning is essential to avoid disruption to club scheduling.

As a guide the following process is recommended:

- **Inspect the courts and identify the issues, such as slippery areas, rips or torn seams, trip hazards, excess and/or compacted sand, weed growth, debris, drainage issues, trees overhanging courts.**
- **Write a thorough works brief for the purpose of seeking quotations for the works.**
- **Seek quotations from two to three experienced contractors, using Tennis Victoria's Infrastructure Contact List as a guide.**
- **Ensure an itemised quotation is provided, outlining exactly what the works will entail and the cost.**
- **Engage the successful contractor to complete the works, taking into account their experience, time taken to complete the works and price.**
- **Allow adequate time and access for the contractor to complete the works. The contractor should outline the time required and how long the courts will be out of action.**

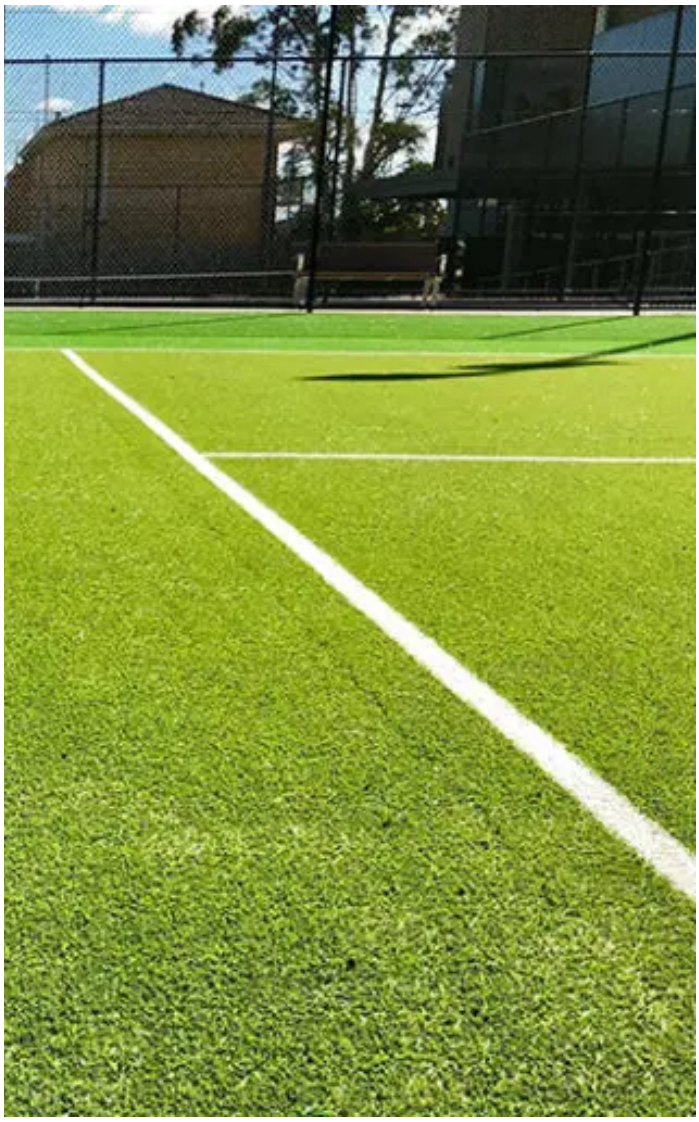
Contact Tennis Victoria if you need a professional facility assessment and works recommendations.

There is a level of quality that would be reasonably expected as part of a court maintenance/surfacing project and selecting suitably qualified and reputable contractors will provide greater certainty that a positive outcome will be achieved.

MAINTENANCE TIMING AND COSTS

Clubs and councils should budget to have an artificial grass court surface regularly maintained and a sinking fund is recommended to ensure the works can be completed when they are required. This will allow the asset owner/club to keep the court surface in optimum playing condition and maximise the court surface lifespan.

Sand filled artificial grass (SFAG) is designed to allow players to play on the fibre tips, not on sand lying on top of the grass. It is imperative that the final settled sand levels are below the top level of the pile height – the final appearance should be of the chosen fibre colour, not sand.



When first installed the artificial grass surface requires a 'settling in' or 'playing in' period where the courts are played on to settle the sand. This ensures optimal distribution of the infill material where the sand settles just below the top of the yarn blade (approx. 1-2mm), and this level should be maintained for the life of the court. Some topping up with sand may be required over the lifespan of the surface.

To ensure the sand settles to an even height and distribution, the grass should be brushed weekly with a stiff bristled broom or preferably with a specially designed court sweeper. Engaging a professional contractor to maintain the courts for three months post installation is recommended to ensure the courts settle in adequately. While payment for this work will be required it is well worth the investment. The maintenance team may also offer advice to club members on how best to look after the court surface on an ongoing basis. Once the artificial grass has settled the surface should be routinely maintained to keep the court in a safe and playable condition and to maximise its lifespan.

SUMMARY OF MAINTENANCE TIMING AND ESTIMATED COSTS

FREQUENCY	ITEM	ESTIMATED COST
Weekly	Inspection and minor grooming	$0
Six months	Inspection and minor grooming	$0
Twelve months	Weed, moss and algae control; drainage and general cleaning; major surface grooming and repairs	$2,500 per court
Two years	Inspect and repair supporting infrastructure	$800 per court
Four – six years	Maintenance of lighting infrastructure	$2,000 per one – three courts
Ten – fifteen years	Court resurfacing	$50,000 per court

WEEKLY OR AS OFTEN AS NECESSARY

NO COST – CLUB VOLUNTEERS

- Remove leaf litter and other debris by using a pull along leaf litter collector (avoid using a blower as this can move the sand infill).
- Ensure all water ponding and silt/slippery areas are removed regularly via a push along soaker drum if available (super sopper). This is especially important prior to play.
- Ensure any spills and/or contaminants, such as drinks (warm soapy water) and chewing gum (ice and scrape off) are removed immediately.
- Protect the court perimeter by clearing dirt and leaf litter from drainage systems and keeping weeds and grass from growing on to the court and surrounding fence areas.
- Minor Grooming to brush the grass fibres up and redistribute the sand across the court surface.
- The court surface should be broomed both across and lengthwise to move sand from areas where it has built-up to areas where the sand has been kicked out of the pile. Pay special attention to the high wear/heavily played areas and it is important the sand level remains approximately 2mm below the fibre tip.
- The method of brooming is a simple push action, where the broom does the work. A hard bristled yard broom is ideal.
- Minor grooming should take approximately one hour.

The aim of grooming is to keep the artificial grass fibre 'blades' free and open, and to keep the sand infill evenly distributed. Doing this will enhance surface performance and improve drainage through the grass. If contaminants are not regularly removed, they will be ground into the artificial grass profile and result in contamination of the sand infill, with compaction of the sand and moss/algae growth causing the grass to lose its porosity and premature surface wear.

EVERY SIX MONTHS OR AS OFTEN AS NECESSARY

NO COST – CLUB VOLUNTEERS

Thoroughly inspect the courts at six monthly intervals to identify issues that can be addressed quickly and/or forecast future works required. This will increase the lifespan of the court surface and allow adequate planning time.

Minor items can be completed by club volunteers, however, engage a professional for any surface repair or major grooming works.

- **Tears or splits/lifting along the lines or artificial grass joins – the seams are the weakest points within the artificial grass surface and can split when under stress or as the surface ages. Repair as required to minimise further deterioration and prevent trip hazards. Clean the split/tear by peeling back and applying joint backing tape.**
- **Uneven sand distribution/worn spots – this should not be a major issue if weekly maintenance is carried out as recommended but repeat the minor grooming recommendations if required.**
- **Trip or safety hazards – an unsafe playing surface should be addressed immediately before play can commence. Identifying these types of hazards early and having the issue addressed avoids disruption to the club's schedules/programming.**
- **Weed, moss or algae growth – either sweep out weeds, hand weed, or control using herbicide or fungicide.**
- **Drainage issues such as dirt, leaves or other debris in drains or pits – ensuring the drainage system works as designed is an important part of court maintenance.**

EVERY TWELVE MONTHS

ALLOW $2,500 PER COURT – CLUB VOLUNTEERS OR CONTRACTOR

A broader check of the courts should be performed annually by the asset owner/club to ensure moss and algae is controlled, identify and rectify any drainage problems and to perform major artificial grass grooming and repairs if required. A professional contractor may need to be engaged for some or all of this work. Issues to look for on an annual basis include the following.

- **Tears or splits/lifting along the lines or artificial grass joins or seams.**
- **Uneven sand distribution or worn spots.**
- **Excess sand on top of the grass pile.**
- **Compacted sand.**
- **Trip hazards.**
- **Weed, moss and algae growth.**
- **Drainage issues and water pooling.**
- **Trees overhanging the courts and/or lights.**

Moss and algae

The initial sand used on artificial grass tennis courts is sterilised and moss and algae cannot grow in this sand. However, because of airborne pollutants, debris, birds, etc. nutrients can build up in the sand and in damp and shady areas this build-up of nutrients, combined with shade and moisture, often leads to the growth of moss and algae.

A court should have a regular application of algaecide sprayed on it and have any weeds removed. The frequency of these applications will depend upon the following factors.

- The dampness and shadiness of the court.
- Openness to airborne pollutants and if the court surrounds are dry and dusty.
- Likelihood of vegetation and debris on court and the extent and quality of weekly maintenance.

As a rule of thumb if the court is in an open area, with little overhanging trees and well-maintained green surrounds, algaecide will only need to be applied once a year. However, this may increase to three times a year for a shaded/damper/dirtier area. Courts shaded for extended periods of the day by buildings and/or large trees may require frequent applications.

After the application of algaecide, any moss or algae should die within two to three days and turn brown. This dead material should then be removed from the court and a second application applied to the growth spots. When there is a small outbreak of spot algae, applying diluted liquid chlorine or scraping the area to remove the algae, sprinkling salt on it, and brooming it into the surface pile can be used to check the growth. If applying a chemical treatment, it must be approved for use by the artificial grass supplier.

Drainage

The importance of keeping water off an artificial grass court is often underestimated, with poor drainage a common cause of dirty, damaged courts. It is critical that stormwater run-off is captured from the court surface and the surrounds and directed away from the court area efficiently. Water ingress to tennis court surrounds and underneath the courts can cause a shrink/swell reaction in the subgrade soil which can severely damage the pavement and create trip hazards in the artificial grass. Poor drainage can encourage weeds, which can encroach on to the playing surface and grow within the artificial grass profile. Weed invasion and overgrowing trees and vegetation can quickly damage the court pavement and surface, especially where aggressive grasses are known, such as couch and kikuyu varieties, and where very large gum trees are present.

To ensure the court drainage system is working correctly the following actions should be taken.

- **The clearing/flushing out of all drainage infrastructure – spoon drains, swale drains, agi-drains, drainage pits and pipes.**
- **Debris such as grass clippings, leaf litter and dirt, stones etc. must be removed from drainage channels and pits to ensure the drainage system functions efficiently in rain events.**
- **Clean out surrounding drainage infrastructure such as earthen swales and pits along the high sides of the courts to ensure water does not empty into the court area during rain events.**
- **Where slotted subsurface drains (agi-drains) are installed to the court perimeter, inspection/flush out shafts should be visible. The subsurface drains should be flushed to ensure they are working efficiently.**
- **Treating and removing grass and weeds from the court surface and fence lines and/or pavement edges.**
- **Trim/lop/thin nearby trees aways from the courts to decrease shade and debris on the court surface and to increase sunlight. This will help limit algae and moss growth.**

Repairs

Quick action to identify and rectify issues early can slow down the deterioration of the court surface and maximise the lifespan of the surface and underlying pavement.

Repairs to the artificial grass surface should be completed by a reputable contractor specialising in sports court surface installation and/or maintenance and may include the following.

- **Re-joining artificial grass seams.**
- **Patching/replacement of worn grass in the high wear areas. This is typically along the baseline areas and are commonly called a baseline insert or patch.**
- **Large tears can be cut out and replaced with new artificial grass using backing tape and adhesives.**
- **Repairs should be as close to the same level and blend with the surrounding court surface as possible to ensure a consistent ball bounce and no trip hazards.**

Allow approximately $2,500 minimum per court per year (at 2023 rates) for grooming and repairs. Cost efficiencies may be achieved where multiple courts require grooming at the one time.

EVERY TWO YEARS
ALLOW $800 PER COURT

General supporting infrastructure
It is important supporting infrastructure is checked and kept in good working order to minimise deterioration and to keep the courts safe and secure.

- **Nets and net posts are kept in good working order. All moving parts (e.g., winders) on net posts should be lubricated, and posts should not be leaning so nets can be set to the correct height.**
- **Nets should be free of holes and torn tapes. Net repairs can be undertaken by net and mesh suppliers as needed.**
- **Fencing and gates should be free of holes, curling chainmesh and loose wires. Fences should retain their shape (top and bottom rails are recommended) and gate hinges should be lubricated and free moving.**

EVERY FOUR - SIX YEARS
ALLOW $2,000 PER 1-3 COURTS)

Lighting infrastructure
Where lighting is installed, and reported as providing dull or patchy light, maintenance of the light fittings can greatly improve the lighting output. This will require engaging a contractor as works usually need a travel tower to reach the height of the light poles. When this work is performed the contractor and asset owner/club should always take care to ensure the court surface is protected.

Maintenance of light fittings can include the following work.

- **Cleaning light fitting lenses to ensure optimum light output.**
- **Trimming trees or vegetation away from the towers to prevent shadowing on the courts.**
- **Checking all light fittings are working.**
- **Re-aiming the light fittings to ensure uniform lighting across the court/s.**

EVERY 10 - 15 YEARS

ALLOW $50,000 PER COURT

Artificial grass court resurfacing

The longevity of a sand filled artificial grass tennis court is primarily determined by its usage, maintenance regime, court surrounds, environment and climate. It is recommended the asset owner/club create a sinking fund for the replacement of the artificial grass surface at the end of its expected lifespan (10 – 15 years). The process to resurface an artificial grass court will include the following steps and a reputable sports court contractor or artificial grass installer should be engaged to complete the work.

- **Remove existing court surface.**
- **Conduct a flood test (quickly wet down the court) to identify any pavement areas holding water.**
- **Repair any base damage or issues, such as cracks, ponding, or joint filling.**
- **Install the new artificial grass.**
- **Spread the sand infill and groom into the artificial grass fibres.**
- **Undertake a three month 'settling in' program.**
- **Adopt a long-term maintenance program and allow for the associated costs.**

Maintenance equipment

A variety of tools will assist the asset owner/club maintain an artificial grass court.

- **Pull along leaf litter collector, such as a leaf litter drag mat (e.g., an Aussie Clean Sweep) to collect the leaves and debris. Using a leaf blower should be avoided as a blower can move the sand infill around and make it uneven.**
- **Hard bristle broom to brush the grass fibres up and redistribute the sand across the court surface.**
- **Push along soaker drum (e.g., a super sopper) to remove excess water from the surface, especially in areas where water pools or ponds.**
- **A metal or plastic spatula, or similar type of scraper, to safely remove chewing gum, isolated areas of algae etc.**
- **Herbicide and fungicide along with associated protective equipment**

TENNIS VICTORIA INFRASTRUCTURE CONTACT LIST

The Infrastructure Contact List provides contact information for court builders, contractors, suppliers and manufacturers, to assist clubs and councils with new facility development, redevelopment or resurfacing of courts, court maintenance, cleaning, lighting and ancillaries.

While inclusion on the list is not an endorsement of the services or capabilities of the companies listed, the companies included are known to have completed work within the tennis environment or those that specialise in servicing the tennis industry. Tennis Victoria recommends that those using this list conduct their own research to ensure the capability and suitability of a contractor for their specific needs or project.

Click here to access the Tennis Victoria Infrastructure Contact List

HOW TO REDUCE YOUR MAINTENANCE NEEDS

The surrounding environment and conditions can influence the extent and the cost of a court's maintenance. Courts subject to a moist environment, heavy airborne pollution such as dust, tree leaf litter and traffic fumes are classified as high maintenance areas.

There are several actions an asset owner/club can do to reduce maintenance requirements.

- **Address drainage to ensure surface water and surrounding ground water is captured and directed away from the courts.**
- **Minimise the dirt and dust on the court surface by landscaping the surrounding grounds and keeping them green and well kept.**
- **Lop any tree branches or trim all vegetation away from the court area to minimise the shade and amount of debris on the surface and reduce any stress on the fencing and lighting infrastructure.**
- **Heavy plantings on the northern and western sides can create dark, damp areas on the court which in turn encourage algae growth and a very slippery surface.**
- **Avoid planting trees within 30 metres of a court and never plant large or invasive species.**
- **If possible, ensure tree root barriers are installed to protect the court pavement from tree root invasion and moisture changes around and under the pavement. An arborist should be engaged to provide advice for existing large or mature trees.**
- **Construct paths or concrete entry points at the main gate entries and wipe shoes before entering the court to prevent stones, twigs or debris being carried onto the surface.**

FACILITY CONDITION AND COMPLIANCE AUDIT

If you have identified issues with your court/s it may be wise to get an expert to complete a court inspection and provide a Facility Condition and Compliance Report. This inspection and report can provide you with comprehensive information on court condition and identified issues, reasons for court failures where relevant, court and run-off measurements and short and long term works recommendations.

This information will enable you to understand the issues, seek quotes, prioritise and undertake any short-term works. It will also assist in planning and budgeting if major works are required.

Please contact Tennis Victoria for more information on Technical Advisory Services.

This guide has been written by 2MH Consulting, a provider of facility advisory services to Tennis Victoria. For more information on 2MH Consulting telephone (03) 5422 2176 or go to www.2mhconsulting.com.au