Tennis Facility Planning Guide

State Government Victoria

tennis Australia's Favourite

Index

Minister's foreword

Tennis is a sport enjoyed by an estimated 420,000 Victorians annually. More than 1,000 tennis clubs and centres are encouraging Victorians to play tennis and lead active lifestyles.

The Victorian Government has been a strong supporter of community tennis facility development. This support has been aimed at providing quality facilities for all Victorians to enjoy a sport that is part of our nation's sporting culture.

That's why the Victorian Government, through Sport and Recreation Victoria, is proud to have teamed up with Tennis Victoria to develop this *Tennis Facility Planning Guide*.

The *Tennis Facility Planning Guide* will help tennis clubs/organisations and councils plan for, and develop sustainable tennis facilities that can be enjoyed by their local communities.

In this guide you'll find tips on a wide range of facility development topics from planning through to construction.

We are confident this guide will become an invaluable tool when planning your tennis facility and assist you to increase participation in your club and community.

Working together we can improve more of our sporting facilities across the state, encouraging more Victorians to get active through sports like tennis.

HUGH DELAHUNTY MP

Minister for Sport and Recreation
Minister for Veterans' Affairs

Executive Director's foreword

Tennis is a sport that can be accessed and enjoyed by all members of the community. Tennis Victoria aims to build upon our state's strong participation in tennis by making the sport a part of every Victorian's life and advancing tennis as Victoria's preferred game.

A key factor for people's ability to access tennis is the quality of courts and associated facilities. That's why Tennis Victoria's Strategic Plan includes the goal to "promote and support inclusive, quality and sustainable tennis environments".

Thank you to the Victorian Government for their support of tennis facilities and making this guide a reality. In partnership with Sport and Recreation Victoria, we believe the *Tennis Facility Planning Guide* will be an important resource for tennis clubs and councils to create an inclusive, quality and sustainable tennis environment.

There are over 5,500 tennis courts in Victoria with a broad range of surfaces, construction methods and maintenance techniques. The *Tennis Facility Planning Guide* will become a key tool for the tennis community to use when planning and developing tennis facilities.

We encourage tennis clubs/organisations and councils to use the Guide, and also consult Tennis Victoria, so that strong partnerships are built for the benefit of increasing community participation through the sport of tennis.

MATTHEW KENNEDY

Executive Director
Tennis Victoria

About this guide

This *Tennis Facility Planning Guide* (*'the Guide'*) has been prepared in partnership by the Victorian Government (Sport and Recreation Victoria) and Tennis Victoria and seeks to provide guidance to tennis clubs/organisations and local councils regarding tennis facility development projects.

Improving community facilities is a key focus area of the Government in order to encourage more people to be active and improve physical activity levels in Victoria.

In addition, providing welcoming, sustainable and quality tennis environments is one of Tennis Victoria's five strategic goals identified within its Strategic Plan. Supporting clubs, facility owners and managers to deliver these environments is a key focus for Tennis Victoria's operational team.

The facility planning process is an essential element of providing quality tennis facilities that can continually meet the needs of club members, participants, administrators, coaches, facility operators, local councils and communities.

Planning the development of a new or improving an existing tennis facility is an involved process that will take time, effort and resources 'to get it right'. Involving stakeholders, communicating with local councils, combining club member skills and engaging professional services are all important steps to consider.

This Guide provides an overview of the tennis facility planning process, and:

- identifies the key planning stages
- identifies facility provision principles
- highlights key resources available
- provides links to a range of industry sources
- identifies opportunities for project funding.

The purpose of the Guide is not to provide detailed technical information regarding every step in the facility design and construction process, but to provide clubs and local councils with a common process and approach to tennis facility development.

Typical tennis facility projects

The *Tennis Facility Planning Guide* provides information and processes for a range of typical local level tennis club and centre facility projects.

The Guide will assist projects such as:

- facility development
- court construction or redevelopment
- court resurfacing and surface conversion
- water and sustainability initiatives
- floodlighting installation
- fence replacement
- clubhouse refurbishment or extension.

Development of the Guide is a key outcome of the Victorian Government's and Tennis Victoria's commitment to provide quality tennis facilities to Victorians.

Context

Facilities Planning Framework (FPF)

Tennis Victoria's *Facilities Planning Framework* (FPF) is designed to ensure that current and future tennis facility provision is delivered through a responsible, collaborative and targeted approach.

The FPF has been developed by Tennis Victoria in conjunction with independent consultants and local and state government representatives.

Key objectives of the FPF in relation to facility development and provision are to:

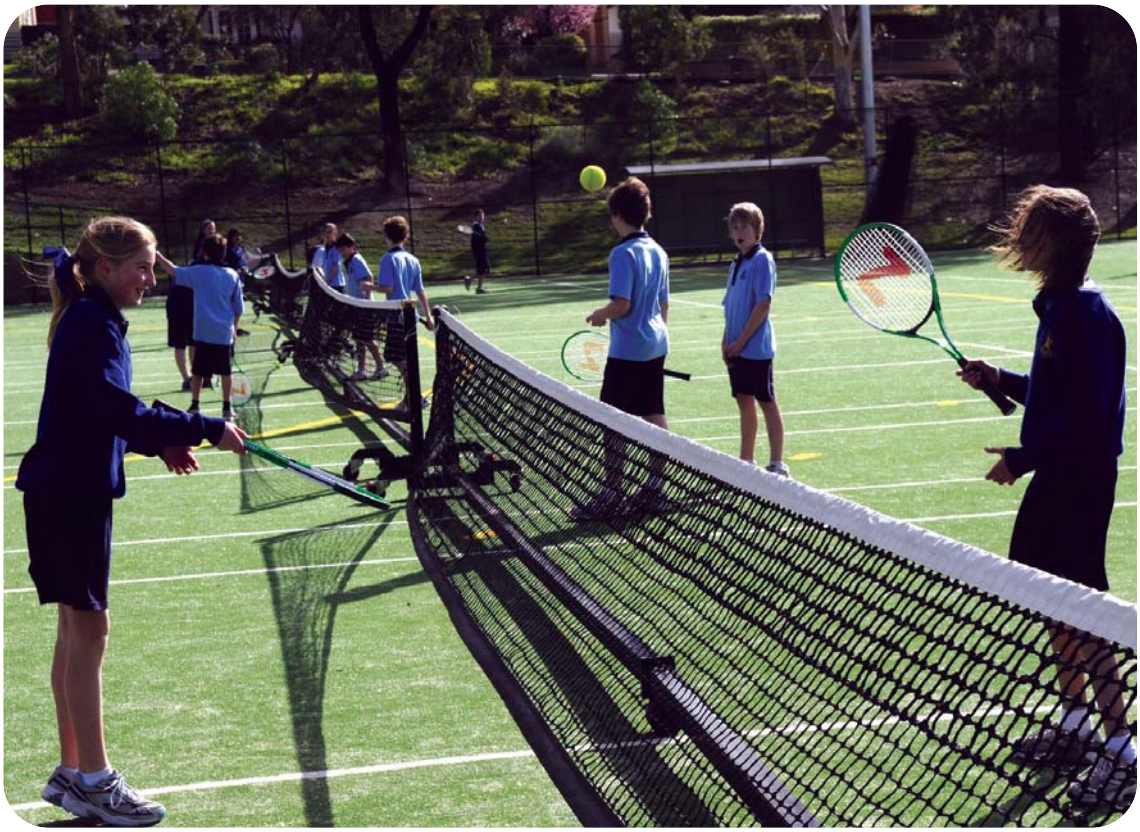
1. Plan and share information.
2. Identify demand, opportunities and gaps.
3. Improve environmental sustainability.
4. Improve club sustainability.

The principles and objectives of the FPF will be used by Tennis Victoria to collaborate with clubs, government and the tennis industry.

Tennis 2020 – Facility Development and Management Framework

Tennis Australia's *Tennis 2020* clearly identifies two key foundations of tennis success: **facilities and facility management**.

Tennis 2020 provides a facility development and management framework for Australian tennis. The document outlines Tennis Australia's *Community Tennis* vision and approach to nurturing and advancing the prospects of tennis and its facilities in partnership with state and territory member associations, clubs, government and other stakeholders.



Key resources and references

The following documents and reference material have been reviewed in the preparation of this guide.

Information sources listed below will provide an additional level of technical information in the event that further detail is required.

Refer to the *'Further resources and information'* section for information on how to access relevant resources.

Tennis QLD Technical Manual

In 2007 the Tennis Queensland Technical Services Advisory Group and Tennis Australia produced a *Technical Manual for the Design, Construction and Maintenance of Tennis Facilities*. This manual provides technical level detail on a variety of tennis facility development projects and is available via **www.tennis.com.au/qld**.

Australian Standards

Many elements of tennis facility construction have relevant Australian Standards. Examples include lighting and fencing standards that guide design, construction processes, selection and use of materials and various management practices.

Reference is made throughout the Guide to specific Australian Standards that should be used in tennis facility construction projects.

More information on Australian Standards is available via **www.standards.org.au** and specific standards and documents are available for purchase via **www.saiglobal.com**.

Artificial Grass for Sport Guide

Sport and Recreation Victoria's *Artificial Grass For Sport Guide* targets the broad and differing needs of sporting clubs and associations, the education sector and local government when installing artificial grass.

Guide chapters are devoted to subject areas such as planning, design, project delivery, management, maintenance and replacement. The Guide outlines proven processes that deliver quality outcomes, highlights case studies and provides 'top tips' to achieve the best outcome.

Principles of facility provision

The preparation of Tennis Victoria's Facilities Planning Framework identified a number of key principles about tennis facility provision and development across the state. These principles include:

1. Effective planning.
2. Efficient management.
3. Considered research and design.
4. Financial management.
5. Environmental sustainability.

An explanation of key elements of each principle is provided below.

1. Effective planning

All projects must be planned. For planning to be most effective, your project must align with the aspirations and overall strategic direction of your club and be defined within a **club business plan** or other relevant planning document.

To maximise the effectiveness of planning and alignment with other organisations, it is advisable for your project to align with current local government sport, recreation and community development plans.

Consultation with a range of individuals and organisations outside of your club will help to identify an agreed project plan, potential partners, opportunities and mutual benefits.

2. Efficient management

Consider the scale of your project and potential development. It is likely that a large redevelopment may require a change in facility and/or club management structure.

It is important to prepare a **likely schedule of use** for your improved facility that identifies all potential facility users (new and existing) and reflects management requirements needed to operate your improved facility.

3. Considered research and design

'Do your homework'. In particular, consider all available options to firmly identify the preferred course of action. Your preferred option should be documented and be prepared with the assistance of appropriately qualified professionals.

If your project is to include the provision of a new or different court surface, select a range of suppliers and speak to other clubs to find out the positives and negatives of each surface. This will help to test their characteristics and suitability for your members.

4. Financial management

The feasibility of all projects should be assessed for both the short and long-term. Lifecycle costs for key facility components should be considered in addition to the initial capital investment required. For larger scale projects such as the development of a regional tennis centre, this is generally done through a **feasibility study.**

Clubs should also be aware that as your facility grows, so will your requirements on management, administration and maintenance items. This should be factored into future club and facility budgeting.

5. Environmental sustainability

The continuation of drought conditions and increasing scrutiny of the impact of human activities on the environment will further support the move towards more environmentally friendly club operations and enhance the need for water conservation plans at tennis clubs.

Tennis facility development projects should incorporate Environmentally Sustainable Design (ESD) principles where practical. Being environmentally sustainable refers mostly to water, energy use and waste management. ESD principles will be particularly relevant for court construction and clubhouse projects, where drainage and water capture opportunities may be provided.

Environmental Policy Tips

It is important to consider Tennis Australia's Court Surface Policy and Tennis Victoria's Court Surface Position Statement and Environmentally Friendly Clubs Policy when assessing ESD principles.

Sport and Recreation Victoria requires all facility funding applications to demonstrate consideration of ESD principles through facility design aspects. Sport and Recreation Victoria's ESD Information Sheet can be accessed via **www.grants.dpcd.vic.gov.au**, clicking on Grants Finder and selecting the Community Facility Funding Program.

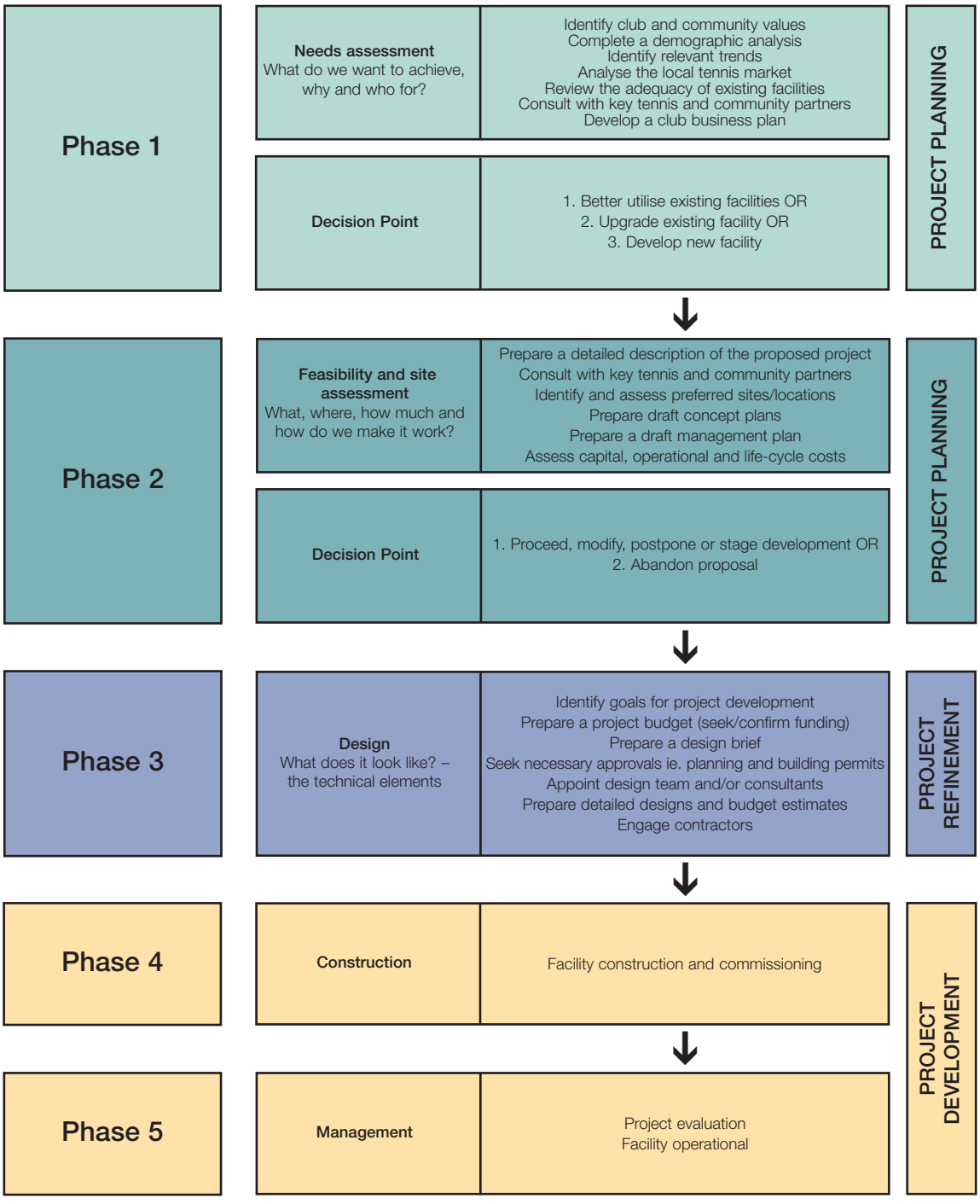
The facility planning process

In planning and delivering a successful facilities project, the following key phases (detailed in the following pages) of the facility planning process should be undertaken. Further explanation of each phase is provided in Figure 1.

The level of detail required in the planning and feasibility phases of your project will depend on the type and scale of your project.

For instance, the replacement of court enclosure fencing would require significantly less planning than the installation of new courts. However, the key principles and process remain the same. For projects undertaken on council land, often councils may manage project design and construction phases as they have staff with appropriate skills and expertise.

Figure 1: Facility Planning Process



The facility planning process

Phase 1 – Club/community needs

The first phase in the facility planning process is to undertake a **club/community needs assessment**. Undertaking this process will assist stakeholders to verify actual stakeholder and facility needs.

The needs assessment should include discussions with key tennis groups, local and state agencies (including Tennis Victoria), your local council, local schools, community and other relevant agencies (such as Access for All Abilities providers) and other providers of tennis and recreation programs.

If a facility development appears necessary, the needs assessment will also provide clear direction regarding project scope, scale and preferred mix of facilities to be provided. It will also help all partners involved to develop key objectives around 'why you are undertaking the project and what will it aim to achieve?'

The key elements of a facility needs assessment include:

- identification of club member and player aspirations
- schedule of existing court usage
- identification of any local trends that may influence a facility development
- consultation with your community and people outside your club and ask what they may wish to see provided
- review of existing on and off-court facilities and services provided at the club
- assessment of current court and facility maintenance practices
- assessment of other local clubs or similar facilities to identify competitors and/or gaps in the market.

One effective way to conduct a needs assessment is to complete a **club business plan** where all club needs, including programs, services, membership, communication, marketing and financial management can all be addressed in detail.

Business Planning Tip

Tennis Australia and Tennis Victoria each provide various resources to assist clubs in developing business and club management plans. Contact Tennis Victoria on (03) 8420 8420 or visit **www.tennis.com.au/vic** for the latest information on business planning.

Phase 2 – Feasibility and site assessment

All facility development projects will require some level of site assessment and feasibility to determine whether they are viable and practical.

The primary purpose of preparing a **feasibility assessment** is to enable an objective decision regarding the longer-term viability of your proposed project.

The level of detail required in your feasibility assessment will differ depending on the scale of your project. For large scale projects, the appointment of an independent consultant may be required.

Your project feasibility should combine a range of input and advice from various planning and technical partners and may include:

- analysis of the local market for tennis
- preparation of project success criteria
- a technical analysis of existing facilities and/or any proposed new location
- concept plans and options
- likely project and facility lifecycle costs
- impact of your project on the local environment
- a potential management and operations plan, including projected facility operating costs, who will manage and how
- identification of key partners to assist in project support, resourcing, delivery and future use and management.

Technical Tips

A technical analysis of your facility at this early stage may include a geotechnical assessment and site survey plan of the proposed land area. This will assist you to better understand the existing soil type and the implications it may have on construction.

Additionally, identifying any subsurface issues and the exact size and levels of the land area available will help to ensure concept options prepared are as accurate as possible. Addressing these items at a later stage in the process might incur additional costs and potentially require redesign if issues are not considered in advance.

Site services plans should be requested from your local council and service suppliers (i.e. water, drainage, sewerage, power, gas and telecommunications).
N.B. Some or all of these plans may be sourced via 'Dial Before You Dig'. For more information go to **www.dialbeforeyoudig.com.au**.
It is also advisable to undertake a building condition audit should any redevelopment of clubhouse, pavilion, shed etc be part of your project.

Tennis Victoria has technical advisors available to assist clubs in preparing concept plans, design options and project cost estimates to help inform a feasibility analysis.

The facility planning process

Budgeting

Once the decision has been taken to proceed with your project, you will need to set a realistic budget for the proposed scope of works - one that is also achievable to fund.

Capital replacement and lifecycle costs associated with your project will be considered in previous planning stages, but should be confirmed in your project budget. Allowance for cost escalations and contingencies are an important element to project budgeting as materials and labour costs can vary without notice.

Be mindful that from the time you commence planning your project to *'turning soil'*, it is likely that the cost of construction and materials will increase, particularly if your project planning spans a number of years.

Managing your **project cash flow** will be important to your success. Contractors will expect to be paid as they complete various stages of work and you will need to ensure that club or partner funding is available to pay out upon satisfactory completion of work.

Technical Tip

Tennis Victoria has produced a lifecycle cost guide for tennis court surfaces and other associated facilities. This guide is available at **www.tennis.com.au/vic** and considers the long-term replacement and maintenance costs associated with various components of tennis court infrastructure.

Sport and Recreation Victoria has also produced a Capital Replacement Program information sheet that will assist clubs to budget for the eventual replacement of infrastructure. The information sheet can be accessed via **www.grants.dpcd.vic.gov.au**, clicking on Grants Finder and selecting the Community Facility Funding Program.

Budget Tip

Clubs should make allowances for GST within your project budget. Many prices are often quoted exclusive of GST, creating an unbudgeted additional 10% on top of your project costs.

Phase 3 – Design

Should your feasibility assessment and project budget identify that your project is viable, the project then enters the design phase. This stage is critical to the overall success of the project and in achieving its objectives.

During this stage, the club management committee or facility manager should be involved in all facets of the facility design process. Any facility design should consider two important facets:

1. **Site and technical** elements.
2. Future **management and operational requirements**.

Site and technical elements to consider in facility design include:

- site details, topography and any identifiable constraints
- site plan showing the extent and scope of land available and ownership details
- plans and details of existing buildings, main services and ground/soil conditions
- schematic diagram of proposed development
- schedule of specific development or construction requirements
- details of any planning conditions to be considered in development (eg. car parking requirements, building height restrictions, floodlight spill)
- timeline for construction and project delivery and any climatic influences.

Most site and technical elements of project design are generally incorporated into drawings, layout plans and associated documentation. This collection of information is often referred to as a **technical specification**.

Management and operational planning will outline how the new or redeveloped facility will be used and should consider the following key components:

- key programs and services to be delivered
- court and facility schedule of use
- marketing and promotional initiatives
- proposed facility management structure
- capital replacement program (see Technical Tip on page 12)
- risk management
- annual operating budget.

Even if your facility development provides little change to your existing operations, the above points should still be considered.

Disability Standards for Access to Premises and Universal Design

The *Disability Standards for Access to Premises* set out the requirements for new and refurbished buildings to allow access by people with a disability. It is expected that all new facility developments comply with the *Disability Standards for Access to Premises* as a minimum.

Please visit the 'Disability Discrimination' section of **www.ag.gov.au** for copies of the Standards and incorporate them into your building planning.

In addition, clubs and councils are strongly encouraged to consider universal design. Universal design is a philosophy that encourages building development beyond what is required by the *Disability Standards for Access to Premises*.
The intent of universal design is to create environments to be usable by everyone, to the greatest extent possible.

The facility planning process

Universal design encourages the development of facilities suitable for use by everyone including people with vision and hearing impairments, families with prams and young children, people with injuries, the elderly and people with mobility impairments.

Clubs and councils should consider ways to ensure access in any facility development, not just for people with a disability but for the whole community.

Facility developments should consider:

- The number of accessible sanitary facilities
- Circulation space in lifts and at doorways
- Passing or turning spaces along long passageways
- Access to upper floors, either via a ramp or lift
- Appropriate access to people with hearing or vision impairment

Design consultants

Whilst an additional cost to your project, design consultants are highly recommended and are a valued part of your design team, particularly for medium to large scale projects. They bring specialist skills in defined disciplines and can ensure that independent design input is provided to meet project needs. They also ensure that appropriate design solutions are recommended and meet relevant industry standards, universal design principles and building codes, as well as keep project costs within budget.

Key design consultants to consider include (NB. the number of consultants used is likely to depend on the scale of your project):

- architect
- geotechnical engineer
- civil and structural engineer
- building and land surveyor
- electrical engineer
- lighting designer
- quantity surveyor or cost planner
- landscape designer or architect
- arborist
- acoustics consultant

Phase 4 – Construction process

Following the preparation of the design brief and technical specification, contractors can be sought to start building your facility.

Your project manager or local council will be able to provide advice on the most relevant process to undertake when appointing contractors. Commonly, medium to large scale projects require formal tenders to be submitted, with smaller scale projects requiring a number of contractors to provide quotations. Industry benchmarks usually specify a minimum of three quotes to assist with price comparison.

Technical specifications are commonly used to define the project scope of works and the standards or requirements by which the work is to be completed. You (or your project manager) will also use the technical specification to apply for planning and building permits, and to guide contractor tender processes.

A **construction timeline** should also be developed to help monitor progress and to ensure your club can revise its operations and maintain member services through the construction phase. Be aware that various construction projects may be subject to weather conditions, which should be factored into the construction timelines.

Technical Tip

When requesting quotations or tenders from contractors (for small, medium or large projects), always prepare a brief (design brief and/or technical specification) for contractors to base their price and scope of works on. This will help you to compare like for like prices and evaluate which companies are providing the best value for money.

Planning permits

A planning permit may be specific to a person or operator and it is always subject to a time limit and expires under specified circumstances. The issuing authority (usually your local council) may impose conditions when granting a permit.

The Building Commission of Victoria defines a **planning permit** as 'a legal document giving permission for land use or development'.

Planning permit requirements may vary between local councils. You should always seek advice from your local council planning department regarding planning scheme provisions and planning permits early in your planning process.

Building permits

You should seek clarification from your local council planning department on whether you require any building permits as part of your facility planning process.

Building permits relate to the method of construction of a building or development. If you have a planning permit you may still need to get a building permit.

Australian Standards

Many elements of tennis facility construction have relevant Australian Standards that guide materials, construction and installation methodologies and various management practices. More information on applicable standards is provided in the following chapter – Facility development considerations.

The facility planning process

Project management

If your project is not large enough to justify the services of a project manager, your local council may assist you in evaluating and appointing various contractors. It is advisable if clubs are managing their own project to appoint an internal club contact who will provide communication and liaison services between all project partners, including club committee, members, contractors and local council representatives.

If your project is of a significant scale, you may wish to engage a **project manager** to assist you in the coordination of design and construction phases.

The project manager would be responsible for managing the activities and deliverables of the project. They would also prepare a **project timeline** that considers a range of external factors including, council budget cycles, grant funding cycles and acquittal procedures, lead time for ordering materials, implications of weather impacts and impact on existing club operations and court use.

Project Management Tip

If you are managing your own construction program, ensure a representative attends the site each day the contractor(s) are working. Don't be afraid to ask questions or check what they are doing against your technical specification. It's your project and you should be in control.

Phase 5 – Management

Club staff and/or volunteers should be consulted to provide practical and operational advice to ensure your facility can be managed efficiently. This consultation should occur throughout the planning, refinement and development phases of your project, and definitely prior to any construction.

Following the construction stages of your project, getting your facility operating to its full potential begins, as does regular monitoring of its performance.

Risk management is a key factor in the operation of your club and facility, and includes addressing potential financial risks, maintenance, safety and potential injury risks, resource availability etc. All identifiable risks should be documented, evaluated and addressed to assist in alleviating and/or managing them.

Risk Management Tip

Tennis Victoria has developed a Risk Management Manual for Tennis Clubs that will help you identify and evaluate risks and create a policy to manage them within the tennis club environment.

HB – 2004 Guidelines for Managing Risk in Sport and Recreation is a resource that provides those involved in sport and recreation with guidance on risk management principles, process steps and applications based on AS/NZS 4360:2004 (Risk Management Standard and Guidelines). It offers a national framework to guide the understanding and management of risk, and a common platform to support strategies and resources directed towards dealing with risk management issues.

The facility planning process

Management performance benchmarks

Tennis Australia, in collaboration with The University of South Australia (CERM ©) have developed a series of tennis club and centre performance benchmarks to assist Australian tennis facility operators to annually benchmark the performance of their tennis facility.

Providing benchmark indicators will assist clubs and facility operators in determining where best to allocate resources and regularly identify any operational issues to address them quickly.

Club management and performance benchmarks can be accessed via www.tennis.com.au.

Facility development considerations

The key facility development considerations included in this chapter include:

- site investigation
- court layout and orientation
- base construction
- court surface types
- court surface selection
- multi-use courts
- floodlighting
- fencing
- court equipment and accessories
- grounds and surrounds
- clubhouses
- the environment.

All elements of a tennis facility are linked and often depend on each other to function effectively and be managed efficiently.

Careful consideration needs to be given to the scale of each facility element to ensure it is aligned with its intended purpose and use. It is also important to ensure that off-court amenities can adequately support court related infrastructure.

Site investigation

All site specific conditions should be assessed prior to undertaking any construction works and prior to any quotes, tenders or contracts being prepared.

Site investigation should be conducted as part of your project planning, following the completion of your needs assessment. This phase is likely to require professional service contractors to undertake specialist or technical analysis tasks.

Your site investigation should address the following key elements:

- storm water flow
- condition of sub-grade base
- location of existing services (eg. power, water, sewerage, telecommunications etc)
- vegetation or remnants of tree roots
- site levels, orientation and wind exposure
- site access for construction machinery
- residential or urban development considerations that may be impacted by your development.

Soil conditions

In tennis court construction, proper grading and consistent compaction often determines the success of installation. To achieve this, knowledge of sub-grade and soil conditions are required.

Most sites will require an investigation of existing soil conditions, and **it is highly recommended that no major construction commence without first obtaining a soil report from an appropriately qualified professional (eg. geotechnical engineer).**

Like many construction projects, tennis courts are susceptible to variations in soil type, the presence of moisture and changing environmental conditions.

A soil report will determine the stability of the proposed site and will inform engineering decisions around the most appropriate court base design, construction and infrastructure installation.

Technical Tip

A soil report prepared by a qualified geotechnical engineer will be the single greatest investment you can make into your project planning. The findings from this report will provide recommendations on the most appropriate design for court bases, drainage, floodlighting, fencing and clubhouse footings.

Court layout and orientation

Your court layout will be dependent upon the configuration of your existing courts, buildings and available land area. This Guide infers that most clubs and facilities are undertaking redevelopment and refurbishment projects rather than constructing new facilities on 'greenfield sites', although the principles are still relevant for new sites.

Court dimensions

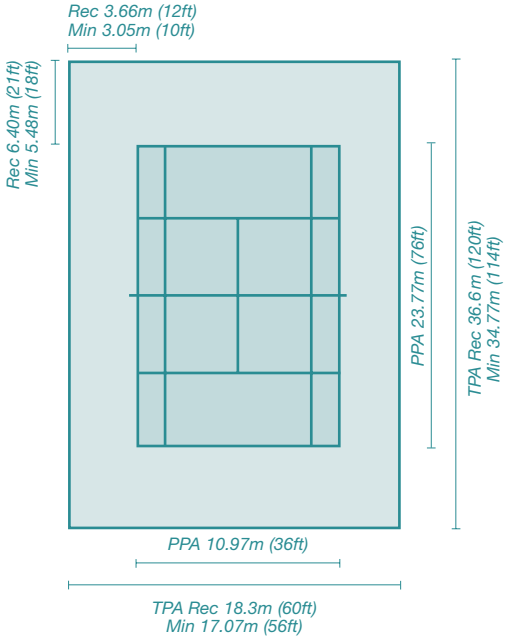
The standard dimensions of a tennis court (Total Playing Area -TPA) are defined in the International Tennis Federation's (ITF) *Rules of Tennis.*

Although the game is best played on a full sized court enclosure (36.6m x 18.3m), the ITF has a minimum recommended court enclosure size (34.77m x 17.07m).

It is recommended that all new tennis courts be built to full size requirements. This will assist in ensuring current standards are being met and may also reduce the likelihood of player injury.

The following diagram provides a guideline for minimum and recommended court dimensions for both recreational and club play.

Figure 2: Recommended tennis court and enclosure dimensions

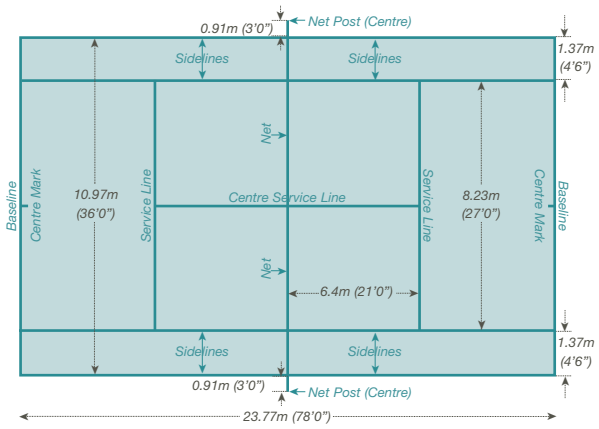


Playing lines

The width of all lines on a tennis court should be a minimum of 2.5cm in width and a maximum of 5cm, except the baseline which may be 10cm. Centre services lines and centre marks should be 5cm.

The following diagram provides a plan for tennis court line markings. All measurements are to the outside of the lines.

Figure 3: Line markings for a standard tennis court



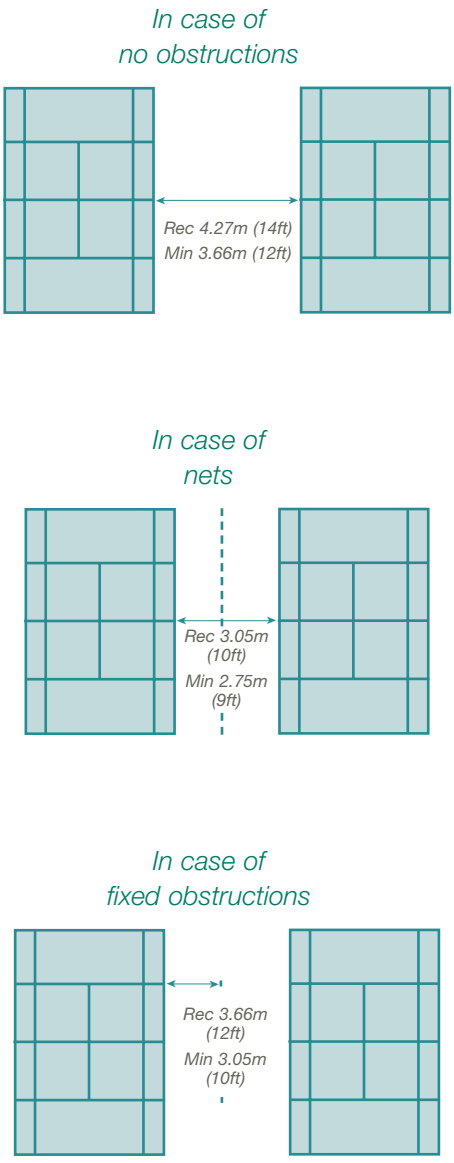
Facility development considerations

Court run-off

Suggested minimum dimensions and run-off areas between the Principal Playing Area (PPA) of a tennis court for club and recreational standard play is; 5.48m from each baseline to fence; 3.05m from sidelines to fence and 3.66m between courts that do not have a fence or other obstruction between them.

The following diagram provides a guideline for minimum and recommended court run-off areas between courts and other obstructions for both recreational and club play.

Figure 4: Tennis court run-off



Orientation

The optimum tennis court orientation is north–south. This is preferred to minimise the effects of sun glare.

In some instances, depending on individual site conditions, this orientation may not be achievable. If this is the case, consideration should be given to sun rotation behind buildings, wind conditions and/or the provision of additional shade trees. If possible, orientating courts north-south and east-west at the one venue should be avoided, particularly if courts run behind each other, creating a visual annoyance during play.

Facility footprint guidelines

Each tennis facility site provides its own unique opportunities for design and layout based on site conditions and available land area. As a guide, the following table provides an estimate of land area requirements to develop a facility. The first column provides an estimate of land area required for court enclosures only and the second column provides an estimate for court enclosures along with spectator areas, clubhouses and car parking.

Table 1: Tennis facility land area guide

Number of courts	Estimated land area required for court enclosures	Estimated total land area required for full site development
2 courts	0.13 ha	0.32 ha
4 courts	0.25 ha	1.05 ha
6 courts	0.38 ha	1.20 ha
8 courts	0.51 ha	1.50 ha
12 courts	0.76 ha	2.20 ha
16 courts	1.02 ha	3.00 ha

Facility development considerations

Facility expansion

Where possible, consider future growth when planning and designing your court and facility layout. A design that can accommodate future growth will be more cost effective in the long term.

Base construction

The most important factor in tennis court development is undoubtedly its base and foundations. Even though court bases are generally not visible, they will have the most impact on the ultimate cost, playability and longevity of your tennis court.

Establishing the correct foundations and base construction specific to your site is essential to ensure the integrity and stability of what is built on top. Poor foundations and base construction will inevitably lead to court damage, surface imperfections, surface life reduction and ultimately large and often unnecessary rectification costs.

Selection of base and foundation materials will also influence your court surface selection, as not all surfaces can be laid on all bases.

The following typical base construction techniques are currently being used to support hard court, synthetic grass and synthetic clay surfaces:

- reinforced concrete
- asphalt
- compacted earth.

An overview of each base construction method is provided in the following sections.

Grass court and red porous court construction requires more specialised and layered base preparation and do not require concrete, asphalt or compacted earth bases to be constructed. More details on grass and red porous courts are provided under court surface types on pages 24 and 25.

Concrete bases

A reinforced concrete slab is a common form of base, consisting of a layer of concrete reinforced with steel mesh. The thickness of the slab will be determined by site specific conditions and technical specifications.

A well constructed concrete base (built to appropriate specification and site conditions) is likely to provide the greatest longevity of all base types. Concrete bases are generally expensive to construct in comparison with asphalt and crushed rock materials and are the most costly to rectify if not built correctly.

Ground and soil conditions play a greater role in the appropriateness of concrete bases, in that they accommodate ground movement by bridging low areas. They have minimal flexibility.

Concrete bases are generally acceptable for the application of asphalt and acrylic surfaces, as well as sand filled artificial grass and synthetic clay.

Additional care through the concrete curing and preparation process must be taken if applying an acrylic surface to a concrete base. Most acrylic surface manufacturers publish technical information on court base constructions suitable for their individual products.

Additional technical information on concrete construction and curing processes is available in the Tennis QLD *Technical Manual for the Design, Construction and Maintenance of Tennis Facilities*. The manual is available via www.tennis.com.au/qld.

Facility development considerations

Asphalt bases

An asphalt base consists of at least two elements.

1. A **structural layer** (termed the *'granular layer'*), which consists of a base of crushed rock. This layer provides the strength of the structure.
2. An **asphalt layer** covers the base of crushed rock. It provides a smooth surface for sound ball bounce, as well as acting as a moisture barrier to protect the structural layer from erosion and water penetration.

Asphalt bases are commonly referred to as a 'more flexible base' that allows some ground movement without failure. Asphalt bases are generally acceptable for the application of acrylic surfaces (cushioned and non-cushioned), as well as sand filled artificial grass and synthetic clay.

The introduction of **porous asphalt** has been seen in many surface conversion projects across metropolitan Melbourne, where red porous courts are being converted to synthetic surfaces. Porous asphalt is often used as a base layer (over red porous courts) in conjunction with needle punched synthetic carpets. This method allows for vertical draining, rather than reconstructing court bases to provide necessary drainage falls.

This method of reconstruction is only effective where both the underlying existing drainage system is functioning properly and the existing scoria pavement is sound enough to support the laying of porous asphalt.

Technical Tip

It is preferable that acrylic surfaces are not applied to porous asphalt surfaces, primarily due to the incompatibility of acrylic surface application techniques and porous asphalt materials.

Compacted earth bases

Compacted earth bases have traditionally been used in conjunction with the laying of sand filled artificial grass and synthetic clay surfaces. In some cases, the flexibility of the base has benefits where small amounts of ground movement occur.

Whilst a cost effective practice, the technique can reflect any significant failure in, or movement of, the base construction through the playing surface by creating an uneven surface.

Use and application of compacted earth bases should be dependent on the full investigation of ground, soil and drainage conditions.

Compacted bases are not suitable for acrylic surface application.

Base construction considerations

Some important considerations in all forms of base construction include the following:

- The investigation of soil, ground and drainage conditions within and around the site area should be conducted to inform the preferred base construction method.
- Base construction design should be developed and guided by court surface choice (refer Table 2 on page 23).
- Install a moisture barrier or waterproofing membrane underneath concrete pavements.
- Ensure court fall ratios follow pavement specifications and are appropriate for the court surface and site drainage requirements.
- Ensure sub-surface and/or perimeter drainage is included in any base construction design.
- All bases will require ongoing maintenance dependent upon site specific conditions and expected design life. For examples visit **www.tennis.com.au** for the lifecycle and cost guide.

Facility development considerations

The following table provides a comparison of the suitability of base construction methods with the range of suitable court surfaces.

Table 2: Court surface and base construction matrix

Court surface	Base Construction Method			
	Asphalt	Porous asphalt	Concrete	Compacted earth
Asphalt	✔	✔	✔	•
Cushioned acrylic	✔	✘	✔	✘
Non-cushioned acrylic	✔	✘	✔	✘
Sand filled artificial grass	✔	✔	✔	•
Synthetic clay	✔	✔	✔	•

✔ *refers to generally appropriate base construction method*

✘ *refers to inappropriate base construction method*

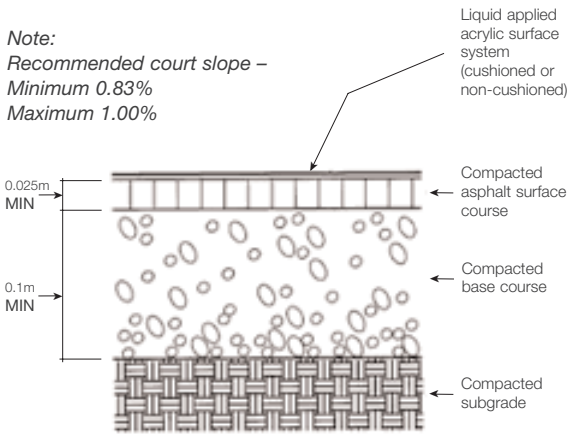
• *refers to an acceptable method if site, ground and drainage conditions support this type of base construction*

Figure 5: Generic tennis court cross section

The following diagram provides a generic cross-section of the typical construction layers of a tennis court including sub-grade, base construction/pavement and court surface layers.

Layers will differ depending on construction method, drainage requirements and surface selection.

Not to scale



Facility development considerations

Court surface types

Tennis Australia classifies court surfaces according to type rather than brand. There are four surface type categories:

1. Clay/red porous.
2. Natural grass.
3. Acrylic hard court.
4. Other variations; including Sand Filled Artificial Grass (SFAG), carpet and synthetic clay.

For each surface type category there are multiple brands within the tennis and leisure industry.

Surface and playing characteristics

It is difficult to generalise about the playing characteristics of surfaces, due to the number of variations available in the market place. Playing characteristics vary according to type of product, age, condition, original construction method etc.

Table 3 on page 28, provides a summary of typical surface characteristics for a range of surface types available in Australia.

The ITF also classifies specific surfaces into various pace categories. The ITF website – **www.itftennis.com** provides up-to-date information on individual surface products and their pace rating.

The lifespan of all surfaces referred to in this Guide are influenced by levels of usage, maintenance regimes and weather conditions. Budgeting for their ongoing maintenance and eventual rejuvenation and/or replacement will be essential for all surface related projects.

Clay/red porous

Across Australia clay courts are known by differing names. In Victoria clay courts are commonly referred to as **red porous** or **en-tout-cas** courts.

For many years they have been the traditional court surface for the majority of clubs in metropolitan Melbourne. It also remains a preferred player development surface of Tennis Australia.

Clay is a generic term used to describe a playing surface that has a clay-like natural material look and feel about it. The playing surface is made from a layer of material with cohesive properties, not unlike slightly moist natural clay; it can be a combination of natural and/or synthetic materials.

Clay surfaces are always permeable, allowing surface water to drain vertically down through the court, facilitating play soon after rain.

Prolonged drought conditions and the availability of sustainable water resources have impacted the retention and maintenance of red porous courts in Victoria. To ensure the longevity of red porous courts, it is essential that an ongoing maintenance regime (including regular watering) is adhered to.

Several recent examples in red porous court rebuilding have highlighted a variety of new, more environmentally sustainable techniques that will assist clubs to retain and/or rebuild their red porous courts. Refer to Tennis Victoria's *Environmentally Friendly Tennis Clubs Guidelines* for recent case study examples.

Facility development considerations

In addition, water treatment programs are available to assist in retaining moisture within red porous courts, allowing their continued use through drought and staged water restrictions.

For more information on available research and water sensitive red porous court construction and maintenance, contact Tennis Victoria for up-to-date advice.

Natural grass

Natural grass courts remain prominent across regional Victoria and are popular on the local and regional tournament calendar. They also remain a preferred player development surface of Tennis Australia.

Grass courts, when constructed properly, provide the fastest court surface available. The surface promotes a serve and volley game, generally due to low, fast and variable ball bounce.

A variety of grass species are available and suitable for tennis court surfaces, although the success of certain species will be dependent on weather conditions.

The quality and retention of natural grass courts is heavily dependent on climatic and environmental conditions, in particular, access to a sustainable water source. The use of grass courts is generally limited to summer season play due to climatic conditions affecting grass growth and usage must be managed to protect the integrity of the surface.

Much like red porous courts, many natural grass courts are slowly being converted to less water and maintenance intensive surfaces that can also provide for year-round and floodlit use.

Acrylic hard courts

Generally in Australia there are three types of acrylic surfacing systems:

- non-cushioned
- liquid applied cushion
- mat laid cushion.

Acrylic coated tennis court surfaces are popular in Australia and can be either non-cushioned or cushioned. Acrylic courts are suited to all levels of coaching, training and competition play.

An acrylic surfaced tennis court is basically an application of multiple layers of acrylic material (eg. resin, paint, etc) on a base surface, commonly concrete or asphalt.

There is a wide selection of proprietary acrylic surface systems available in Australia. In very basic terms an acrylic surface comprises of applying an initial (filler) coat(s) to the base surface then applying the final coloured coats. The composition and application method of the acrylic material has a direct influence on the playing characteristics of the court.

The exact performance of acrylic surface differs from product to product and from its usage, but they can generally be described as being medium-paced with an extremely true ball bounce of medium-high height.

The performance, aesthetics and longevity of acrylic surfaces are dependent on conducting an appropriate maintenance regime. The single most important factor in prolonging the useful life of an acrylic tennis court surface is keeping them clean.

Facility development considerations

The lifespan of an acrylic surface is not forever. Budget provision should be made for recoating every seven to ten years (depending on use, maintenance and surface quality) at a cost of approximately 80% of the original acrylic surface cost (just the surface, not the whole of court costs).

Both **liquid applied and mat laid cushioned acrylic surfaces** require the same acrylic surface layers as non-cushioned surfaces. The key differences in cushioned courts are the layers of cushioned properties built into the construction process. Cushioned courts are more likely to spin and also provide a level of comfort for players underfoot.

Liquid applied cushioning is provided in layers spread across the court area until the desired thickness is achieved. This method has the advantage of being able to adjust cushioning thickness based on preference and budget constraints.

Mat laid cushioning systems differ in that the cushion layer is delivered in pre manufactured rolls of a predetermined thickness. Rolls are laid out, placed in position and then adhered to the base.

Generally acrylic surfaces, particularly cushioned surfaces, are more expensive to construct than other surfaces, predominately due to more intensive base construction and drainage requirements, and the cost of cushioning materials.

Acrylic surfaces should only be applied to concrete or asphalt bases (that have undergone appropriate curing time and cleaning) and only be applied by experienced professionals approved by the product manufacturer.

Sand Filled Artificial Grass (SFAG)

Over recent years there has been an increasing trend of installing artificial grass court surfaces, more correctly referred to as sand filled artificial grass.

A SFAG surface is basically a tufted synthetic carpet laid on a base usually constructed of concrete, asphalt or crushed rock. The carpet is then 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.

SFAG courts are a cost effective court surface that provide soft underfoot properties desired by many players. If laid correctly, their efficient drainage and ability to be played on when damp make them popular with commercial centres and coaches.

Their playing characteristics vary significantly between products, but generally provide medium-to-very fast ball speed and medium-to-low ball bounce. Their playability is dependent on maintenance regimes, in particular the regular grooming of the surface and the rejuvenation of sand particles.

Budget provision should be made for resurfacing SFAG surfaces every 10 to 12 years (depending on use, maintenance and manufacturer warranties).

Facility development considerations

Synthetic clay

Synthetic clay is the collective term given to a range of products available in the market place.

Synthetic clay surfaces are SFAG carpets that are overfilled (by 1mm to 2mm) with a red coloured sand product to simulate the appearance and playing characteristics of a clay or red porous tennis court. The overfilling of the carpet requires sand to be brushed from lines on a regular basis, much like red porous courts.

The surface does not require watering and provides similar cushioning and drainage properties as SFAG courts.

Synthetic clay courts are generally a more expensive product than SFAG surfaces, placing them in the middle range of surface development costs.

Their playing characteristics vary significantly between products as well as on wet or dry conditions. Their playability is dependent on maintenance regimes, in particular the regular maintenance and management of sand particles.

Budget provision should be made for resurfacing synthetic clay surfaces every 10 to 12 years (depending on use, maintenance and manufacturer warranties).

Contractors and suppliers

There are many different court surface products manufactured in, and supplied to, the Australian market. Contact Tennis Victoria for a list of suppliers, manufacturers and contractors known to operate within Victoria. Additionally, the Sports Contractors Association can provide a listing of members that service the Victorian tennis industry via their website at www.sportscontractors.com.au.

Table 3: Comparison of court surface characteristics

The following table provides a summary of characteristics of various court surfaces. The performance, aesthetics and longevity of acrylic surfaces are dependent on conducting an appropriate maintenance regime. Indicative costings for various court surfaces are available via www.tennis.com.au

Court surface	Speed of court	Height of bounce	Trueness of bounce	Topspin	Slice	Footing – sliding/firm	Shock absorption
Red porous	Slow	Medium	Almost consistent	Yes	Yes	Sliding	Medium-soft
Natural grass	Fast	Low	Variable	Little	Yes	Partial slide (surface may be slippery particularly if wet)	Soft
Non-cushioned acrylic	Variable	Medium–high	Consistent	Yes	Yes	Firm	Medium-hard
Cushioned acrylic	Variable	Medium–high	Consistent	Yes	Yes	Firm	Medium-soft
Sand filled artificial grass	Medium–fast	Medium–low	Consistent	Little	Yes	Firm	Medium-soft
Synthetic clay	Medium–fast	Medium–high	Consistent	Little	Yes	Partial slide	Medium-soft

0
Source: Tennis Australia

Facility development considerations

Court surface selection

Selecting a surface or surfaces that meet all member, player and stakeholder needs and objectives is difficult. However, engaging them and other users in the selection and decision making process will help to make a well researched choice.

As it is difficult to generalise about the playing characteristics of all court surfaces available, the best way to inform yourself and your members of different surfaces is to play on them. Tennis Victoria has a growing list of clubs and their specific surfaces provided and encourage all clubs to try a range of surfaces as part of their decision making process.

Other considerations that should be taken into account when selecting the most appropriate surface for your club include:

- member and user preferences
- intended use and level of play
- future club directions and management
- coaching requirements
- tournament requirements
- any requirement for similar surfaces or reasons to provide a mix of different surfaces
- site conditions
- cost of installation and replacement
- surface lifespan and warranty
- maintenance obligations and cost
- access to funding opportunities
- affordability and value for money
- environmental impacts
- potential for vandalism.

Appendix 1 provides a sample court surface assessment tool for clubs to adapt and use in their surface selection process.

Multi-use courts

Multi-use courts are a practical solution to supporting a range of sports, including tennis, and are more commonly used in school and recreation reserve environments.

In all multi-use environments, some compromise will be required by all sports in surface and infrastructure provision, as it is difficult for one single surface to meet the range of needs of all sports to be played on it.

Multi-use applications that include tennis courts are commonly provided with netball (hard court acrylic surfaces), hockey (SFAG surfaces) or soccer (sand filled/rubber crumbed surfaces). Various products are available on the domestic market to suit multiple sports.

Some key considerations in providing multi-use surfaces and facilities that cater for tennis include:

- Use more dominant line marking colours to suit the main intended use. For example, white lines for the main user sport, yellow lines for the secondary user sport, etc.
- The appropriateness of sleeves and caps for relevant goal and tennis net posts or the use of roll-away nets and goals.
- Lighting requirements for tennis are different to other sports. Floodlighting design should meet minimum Australian Standards for all intended users. Ensure one lighting system serves the variety of users.
- Court dimensions and run-off areas vary between tennis and netball.
- Cushioned and non-cushioned acrylic surfaces are suitable for netball competition.
- Drainage requirements of various users.

- The use of shock pads underneath hockey playing surfaces is not ideal for tennis ball bounce, however there are examples of this sharing in existence. A compromise position may be using a thinner shock pad than is ideal for hockey.
- Carpet pile length for SFAG surfaces should be investigated to ensure they provide a playable length for tennis (generally not longer than 19mm).
- *Third-generation* surfaces commonly used on soccer pitches are not suitable for tennis due to their longer pile heights (eg. often greater than 60mm).

Netball Victoria, Hockey Victoria and Football Federation Victoria all provide surface information and technical requirements for their sports. It is advisable to contact the relevant peak bodies if implementing a multi-use surface project.

Floodlighting

Floodlighting is a highly desirable element to any club or tennis facility. Lighting has the ability to maximise court use, create diversity in club activities and allow your club to keep pace with the latest tennis participation trends.

There are a number of considerations that should be addressed through planning and consultation discussions with the following groups:

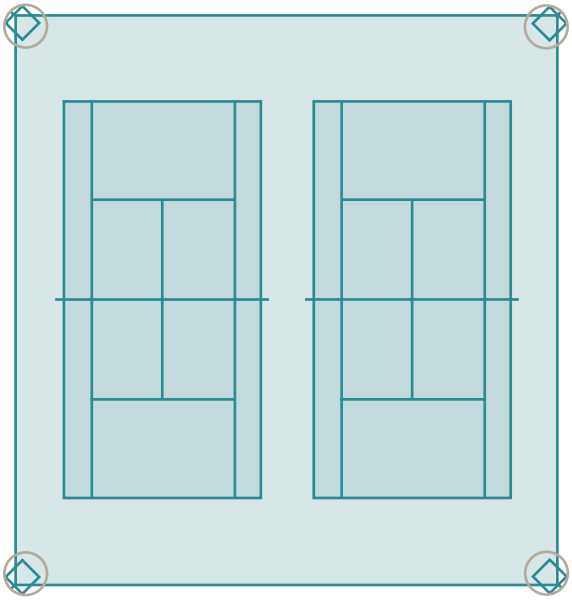
- Club members regarding potential uses, needs and costs.
- Your local council regarding planning requirements, permission and impact on the local environment.
- Electricity suppliers regarding existing service capabilities and potential upgrades required.
- Qualified persons regarding lighting design, installation options and material selection.
- Other tennis clubs by visiting them to gain an appreciation of lighting demands and lux levels.
- Tennis Victoria to seek specialist lighting design and installation advice.
- Other sports to determine their lighting requirements if it's a multi-use court.

Lighting configurations

Tennis court lighting systems generally consist of two main types.

1. **Corner lighting** systems are typically used for double court configurations, with high-tower lighting masts located just outside each corner of the court enclosure. Towers are generally no higher than 15m in club environments.

Figure 6: Standard 2-court corner lighting design provides a standard 2-court light pole configuration for high tower corner lighting.

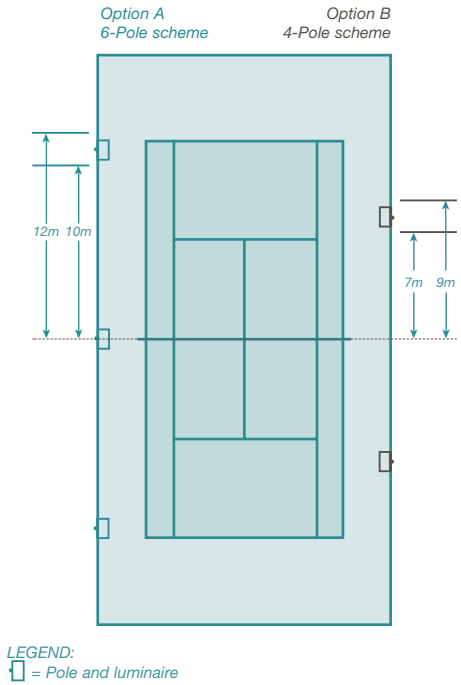


Facility development considerations

Recent lighting trends have seen an increase in the number of **side-lighting** configurations. A vast range of pole configurations exist for side-lighting systems, but they typically include four to six lights and poles per court, ranging from 8m to 12m in height.

Figure 7: 4 and 6 pole side lighting design options.

The following diagram provides typical four and six pole floodlighting configurations.



Both corner and side-lighting systems should be designed and installed to meet Australian Standards *AS2560 Guide to Sports Lighting* and *AS2560.1 - Part 1 General Principles and AS2560.2.1 – Part 2.1 Lighting for Outdoor Tennis* for design, luminaries, lux levels, uniformity and pole heights.

Technical Tip

Generally, **planning permission** is required for the installation of new floodlights. Early in your planning, seek advice from your local council regarding your obligations, restrictions and the information the council requires for a relevant planning application. This may include the provision of proposed lighting designs, engineered drawings, lighting spill diagrams or an environmental impact study.

Light pole installations (over 8m in height) may also require a **building permit**, irrespective of whether planning permission is also required.

Facility development considerations

Court lighting levels

While meeting the lux level standard is important, the consistency of light is critical and is measured by uniformity. Where uniformity is poor, the eye struggles to follow the flight of the ball and predict its speed.

Tennis court lighting levels should be developed based on the intended standard of play. The following table recommends lighting levels suitable for various levels of play.

Table 4: Recommended maintained horizontal illuminance values (from AS2560.2.1)

Level of play	Minimum Horizontal Illuminance	
	PPA (Lux)	TPA (Lux)
Recreational	250	150
Club competition	350	250
International & National	1000	800

PPA – refers to the Principle Playing Area

TPA – refers to the Total Playing Area

Considerations of lighting provision

A range of design, material selection and installation options and alternatives should be considered in your floodlighting project.

- Assess the adequacy of your existing power supply to accommodate new or more court lighting. Budgeting for power upgrades can significantly add to your project costs.
- Future expansion. If you are not installing lights on all courts, consider making an allowance for the wiring and power supply for other courts if you wish to add more lights at a later date.
- Geotechnical assessment of ground conditions for pole installations and footings is essential, and certification of lighting poles by a structural engineer will be required for second hand poles.
- Risk management issues may result if lighting poles are placed within court enclosures and this should be discouraged whenever possible.
- Providing access to a secure light control system external to clubrooms may help to maximise use and minimise facility management requirements.
- Various coin and key operated mechanisms are available to ensure a user pays system is available.
- Provide adequate safety lighting to exit courts when lights are switched off.
- Consider how the power cost and replacement of globes will be paid for and undertaken.

Fencing

Fencing performs a number of functions, all of which should be considered in your facility design. Key functions include:

- the retaining of balls on court
- dividing courts
- providing access to courts
- safety and security
- windbreak support
- signage display.

Whilst fencing provides basic functionality to the tennis court, it is important to consider budget, environment and site restrictions. Other considerations include:

- Top and bottom rails to provide longevity, stability, safety and visual enhancement.
- Visual amenity can also be improved by using black poles and mesh (rather than galvanized finishing) and also provides good background contrast to ball colour.
- Reduced side fencing heights to enhance spectator viewing.
- Ensuring gates are wide enough for accessible entry and for maintenance equipment.
- Proximity of trees and overhanging branches.
- Windbreak planting in adjacent areas.
- Wind and sight screening and signage loads are incorporated into structural design.
- Future court expansion.

Australian Standard AS1725.2

Australian Standard AS1725.2 Tennis Court Fencing – Commercial recommends standard tennis court enclosure fence heights of 3.0m or 3.6m for club and public court environments. Tennis Victoria recommends a height of 3.6m wherever possible.

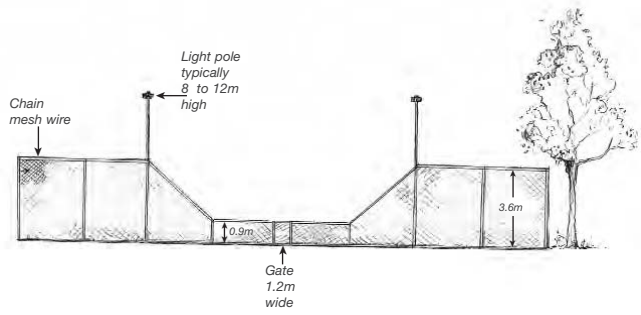
Technical Tip

Reduced side fencing heights are fast becoming a trend in new facility design and development, particularly where club and court security is provided by existing boundary fencing.

The following diagram provides a typical alternative side fencing profile that enhances spectator viewing and promotes visual appeal.

Tennis court fencing should be designed and built considering local conditions. Fencing should be designed to support additional weight loads that wind screening and signage may require. This should be a particular consideration in windy areas.

Figure 8: Alternative side fencing profile



Facility development considerations

Court equipment and accessories

The type and use of court equipment and accessories will be dependent on the type of facility you operate, the way in which it is managed and your choice of court surface.

The most common need for court equipment is for **net posts, nets and centre straps**. These can make a significant difference to the visual appeal of your courts, functionality of play and use and safety to players.

The ITF's *Rules of Tennis 2009* specifies the requirements for net posts. In the club environment, two important net post considerations include:

1. The selection of **internal or non-obtrusive winding mechanisms**. Winders that protrude present a safety hazard for players rounding the net post, particularly where they are at head height for children.
2. The **use of sleeves** in net post installation will allow for post replacement without having to dig posts out of footings. This will prove helpful and more cost effective where concrete or asphalt base constructions are used and in multi-use applications.

Grounds and surrounds

The management of grounds and surrounds, as well as court maintenance, should be considered in your project. Do not underestimate the power of visual appeal and atmosphere on current and prospective members.

Consider the following key items in your planning:

- Create a strong entry to your club and associated clubhouse and accessible thoroughfares between court enclosures (including application of standards for accessibility).
- Cater for spectators and court viewing, through the provision of covered areas, seats, accessible toilets and access to food and beverages.
- Landscape areas for visual appeal with manageable and easy to maintain vegetation or other materials and products.
- Environmental benefits and potential for inclusion of water reuse and recycling initiatives.
- Ensure car parking is adequate to meet your local council's planning scheme guidelines, as well as cater for expected volumes. Parking within close proximity to courts and clubhouse is recommended.
- Provide an outdoor area for social gathering and functions and/or an area for children to play safely.
- Venue security and potential for vandalism and graffiti.

Facility development considerations

Clubhouses

A clubhouse plays a vital role within the tennis club environment. The clubhouse is often the visible face of the club and has the ability to create a lasting impression. It is a factor in attracting and retaining members.

Player, participant and community expectations are continually increasing, as are building regulations and requirements. Keeping pace with expectations and change can be challenging for clubs in providing quality and welcoming facilities.

The size, location and layout of your clubhouse should be commensurate with the number of members, the intended use of the facility and the preferred management model of your club. Clubhouses that do not meet member and usage needs may restrict the viability of your facility, and those that are too large become cumbersome to manage and maintain.

Club members, your local council and local community groups and stakeholders should all be consulted to help determine the most appropriate clubhouse facility.

If contemplating clubhouse refurbishment, improvement or replacement, the principles and processes highlighted in this Guide will assist you to achieve your goals.

Clubhouse design considerations

Professional building and architectural expertise should be engaged if you are considering a clubhouse improvement or development project. The following should be given specific consideration through the design phase of your project.

- Conduct a building condition audit to understand what areas of your existing clubhouse may be retained and what areas must be changed.
- Any change to an existing building structure must accommodate and promote the *Disability Standards for Access to Premises* and include universal design principles.
- Consider future court, facility and clubhouse expansion plans in your design.
- Incorporation of ESD practices including water recycling and reuse, energy efficient materials and products, use of natural light and insulation, building orientation etc.
- A central location close to courts and car parking is preferable, maximising views across as many courts as possible.
- Adequate storage areas for court, coaching and maintenance equipment. Storage areas away from the clubhouse may be required where fuel operated equipment or chemicals are to be stored.
- Provision of an office if you intend to provide on-site management, tournaments and events.
- Kiosk, canteen or café that provides both an internal and external servery along with plenty of storage space.
- Open area large enough to cater for intended number of players and members. Providing this area as flexible space may increase your ability to use it for a range of other tennis and non-tennis related activities.
- Opportunities for shared and/or community use.
- Toilets, showers and change rooms that meet Building Code requirements.
- Adequate heating and cooling to maintain comfort levels.
- Shade and outdoor spaces to cater for family friendly activity.

The following concepts define the ideal layout configurations however it is acknowledged that these configurations may not be possible in all circumstances. Please contact Tennis Victoria on (03) 8420 8420 for further detail on design guidelines.

Facility development considerations

Figure 9: Small community club

Facility layout

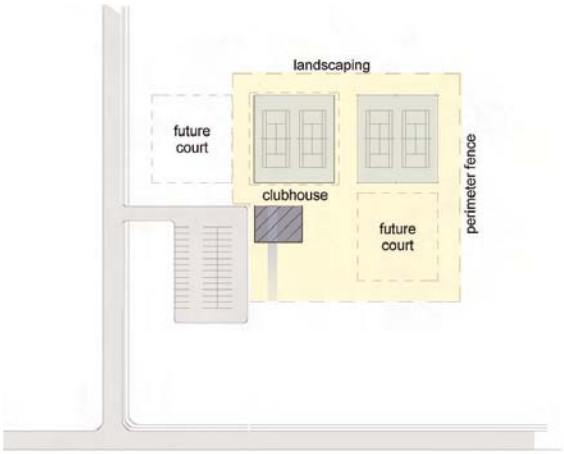


Figure 10: Medium community club

Facility layout

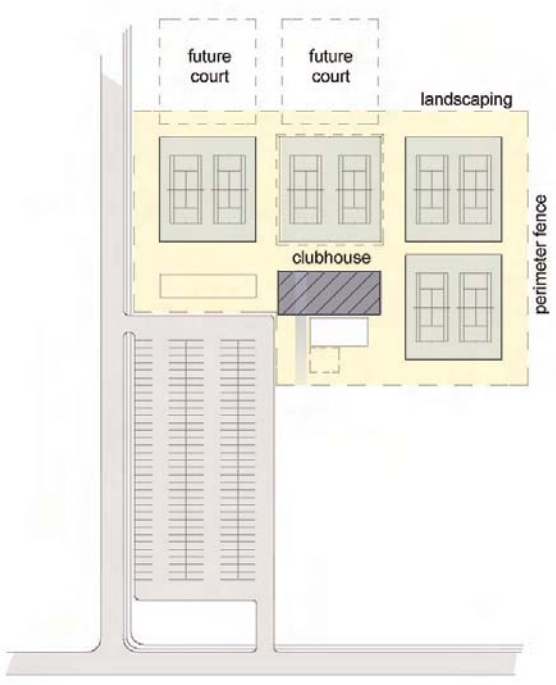


Figure 11: Regional community centre

Facility layout

Facility development considerations

The environment

Tennis Victoria has produced guidelines to assist tennis clubs to be more aware of environmental impacts in the planning and management of their facilities. In particular, the guidelines are designed to assist clubs to work towards being more environmentally sustainable in relation to water and energy use and waste management.

Sport and Recreation Victoria encourage the inclusion of ESD elements in Sport and Recreation Victoria funded projects. Environmental sustainability should be considered throughout all phases of facility development. Alternative environmentally friendly options are often available in many areas of design, operation and management of your facility.

We all play a role in environmental management and in achieving environmental sustainability and efficiency. Court surface choice, maintenance practices, water reuse, plumbing fittings and fixtures, floodlight use and design, waste recycling, building materials, mulching gardens etc all have an impact on the environment.

Please refer to Tennis Victoria's *Environmentally Friendly Tennis Clubs Guidelines* throughout the development of your project – available at www.tennis.com.au/vic.

Project funding

Funding for your facility project may come from a number of different sources, including the tennis community, government and/or private sector.

Funding programs, guidelines and levels change regularly, so research your options and opportunities for each project you undertake.

National Court Rebate Scheme

Tennis Australia's *National Court Rebate Scheme* is a national funding program aimed at stimulating court growth and improving facilities around the country.

Affiliated clubs are eligible to submit applications via Tennis Victoria for funding to develop or upgrade court surfaces (please confirm with Tennis Victoria what surfaces will be funded under this scheme) and associated infrastructure, including base preparation and development, lighting, fencing, water saving initiatives and ancillary items.

Guidelines and application forms are available via **www.tennis.com.au**.

Facility Loan Scheme

The *Tennis Australia Facility Loan Scheme* is available to financially assist affiliated clubs, centres and associations to upgrade, replace or improve their tennis facilities, by providing low interest loans.

A club, centre or association will often embark on a project utilising grant monies from local and/or state government, as well as their own funds. The *Tennis Australia Facility Loan Scheme* is designed to assist with shortfalls that applicants may have in project funding after other funding avenues have been determined. Loans of up to $80,000 are available.

Guidelines and application forms are available via **www.tennis.com.au.**

Neale Fraser Foundation

The *Neale Fraser Foundation* is a registered project with the Australian Sports Foundation Ltd (ASF). The Foundation provides affiliated tennis clubs the opportunity to offer tax deductible donations for potential donors towards facility development projects. More information is available via **www.tennis.com.au/vic**.

Victorian government

The Victorian Government provides funding assistance to support local community clubs and organisations through a range of grant programs.

Sport and Recreation Victoria's Community Facility Funding Program contributes to the provision of high quality and accessible community sport and recreation facilities across Victoria.

Guidelines and application forms are available via **www.grants.dpcd.vic.gov.au**.

Local government

Availability of funding varies between local councils and it often requires a contribution from the club, either a financial commitment or contribution in-kind.

Local government commitment can be required to attain Tennis Australia funding and project support.

Project funding

Local community

Community funding can be sourced through a range of different avenues, including fundraising activities, through volunteer labour (supervised by qualified contractors) and by donations and project sponsorship activities.

Don't underestimate the power of your local community to support your project. It is likely that they may want to see it succeed just as much as you do.

Education sector

If your facility is located with, on or near a school facility, opportunities for joint funding through the school and education department may be available. Funding opportunities are likely to be treated on a case-by-case basis and consultation with school personnel would be essential.

Private sector

Private interests such as local businesses, developers, key users or major local employers operating within your local community may contribute financially or by providing in-kind services and materials towards your project. All levels of support will count towards getting your project up and running.

Other agencies and funding programs

Grants may also be available from time-to-time through other government agencies and funding bodies. Organisations may include state and federal government departments, regional agencies, service providers (eg. water and power) and ad-hoc community development programs.

Stay in touch with Tennis Victoria, your local council and/or regional sports assembly for up to date information on available grant and funding programs.

Further resources and information

Tennis Australia has a range of fact sheets and technical information that should be sourced throughout the various phases of your project. Information can be provided on the following topics and is available via **www.tennis.com.au**:

- court and enclosure dimensions
- court surfaces
- clubhouses
- floodlighting
- fencing
- foundations and bases
- funding
- maintenance and equipment
- management
- nets
- outside amenities.

Tennis Victoria can provide further information on the following topics:

- best practice guidelines for clubs
- business plan and club development template
- environmentally friendly tennis clubs guidelines
- local contract and supplier listings
- red porous court construction case studies
- risk management guide for clubs.

The above information can be accessed via **www.tennis.com.au/vic** or by contacting Tennis Victoria on (03) 8420 8420.

American Tennis Court Construction and Maintenance Manual (Fourth Edition 2006)

The United States Tennis Association and American Sports Builders Association have collaborated to prepare a comprehensive guide and construction principles used by contractors operating in the Australian market. The publication is available – **www.sportsbuilders.org**.

The **Sports Contractors Association** is an industry body that can offer advice on design specifications and provide member and associate contacts – **www.sportscontractors.com.au**.

The Victorian Government through **Sport and Recreation Victoria** and its regional offices can provide advice regarding facility development and funding opportunities – **www.sport.vic.gov.au**.

The **Municipal Association of Victoria** (MAV) provides contact details for local government areas in Victoria – **www.mav.asn.gov.au**. It is recommended that all clubs discuss their project with their local council to ensure future plans meet council objectives and community expectations. It is important to have these discussions prior to seeking funding or resource support.

Glossary and definitions

The following definitions are provided for generic terms referred to throughout the Guide.

Acrylic

Material used for surfacing courts that provides colour and texture in the court surface.

Base

The part of a court structure on which the playing surface is applied.

Business Plan (Club)

A formal statement of a set of club goals and the plan for reaching those goals.

Capital replacement program

A statement of all the required tasks, responsibilities and costs that should be taken into consideration for the future replacement of infrastructure.

Cushioned acrylic

Acrylic surface that includes cushion properties.

Geotechnical report/engineer

A ground condition report prepared by an appropriately qualified engineer for a specific site. It reports such factors as soil type, compaction, moisture levels, and potential for ground movement and moisture level change. A Geotechnical Engineer is a specialist qualified to prepare a geotechnical report.

Greenfield site

An undeveloped site earmarked and suitable for future facility development.

Illuminance

The total amount of visible light illuminating a point on a surface from all directions above the surface. The standard unit for illuminance is Lux.

Lifecycle cost

A comparison of not only the initial capital cost for specific facility elements, but an analysis of ongoing usage, maintenance and replacement costs.

Luminaire

The housing that contains a floodlight lamp. The term includes the lamp, reflector and the lens.

Principle Playing Area (PPA)

The area of the court bounded by the baselines and the doubles side lines.

Project manager

A suitably qualified expert who is engaged by a client to oversee the design and construction phases of a project.

Pavement

A term used to describe an asphalt or concrete court base.

Pile/pile height

The tufts or loops of yarn that form the playing surface in synthetic grass and synthetic clay courts. Fibres are available in a range of colours. Pile height refers to the length of the pile (standard pile height is 19mm).

Glossary and definitions

Red porous

Commonly referred to as en-tout-cas, red porous is the term given to clay courts that are generally found across metropolitan Melbourne.

Schedule of Use

A document that details the intended use of a facility and is sometimes compared to the existing use of a facility.

SFAG

Sand filled artificial grass.

Standards Australia

The nation's peak non-government standards organisation. It is charged by the Commonwealth Government to meet Australia's need for contemporary, internationally aligned standards and related services.

Synthetic clay

Collective term applied to outdoor carpet products that provide similar playing properties of red porous or clay courts.

Synthetic grass

Collective term applied to outdoor carpet products used in tennis court and other sports facility surfacing.

Top and bottom rails

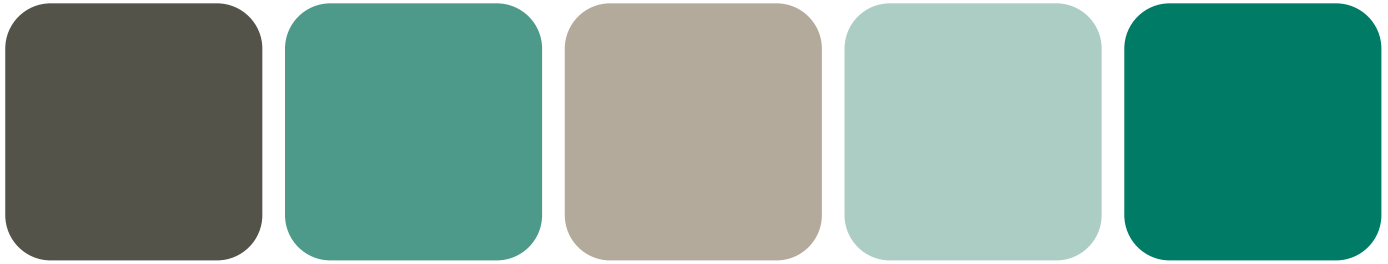
Horizontal rail supporting the chain mesh at the top and bottom of court enclosure fencing.

Total Playing Area (TPA)

The total court area including the principle playing area and the court surrounds to the edge of the court surfaces (usually all that is enclosed within the court enclosure fencing).

Uniformity

This is a measure of the uniformity of light on a tennis court. It is important as it measures the difference (and consistency) between the bright and dark areas.



Appendix 1 – Club assessment tool – court surface selection

Court surface	Usability/ functionality	Meets Member needs	TA player development surface	Maintenance obligations	Environmental sustainability	Capital costs	Replacement costs	Total score
Red porous								
Natural grass								
Non-cushioned acrylic								
Cushioned acrylic								
Sand filled artificial grass								
Synthetic clay								

Provided above is a sample matrix of what clubs would generally evaluate court surface choice against. The headers in each column are transferable based on club objectives and key selection criteria.

Court surface and product choices can be further refined and evaluated by adapting the 'court surface column' and using specific surfaces or products when you have decided on the type of surface your club may wish to install.

For each column, develop a scoring system from 1 to 5 (1 being least compatible with club objectives and 5 being most compatible) and score each surface within the matrix. The surface or surfaces with the greatest score(s) will be easily identifiable and your decision quantified against a set of agreed selection criteria.

Tennis Victoria has developed a Court Surface Selection matrix tool in Microsoft Excel format to assist clubs in developing a similar model to what is presented above. Please contact Tennis Victoria's Infrastructure and Environment Manager on telephone (03) 8420 8420 or email tvreception@tennis.com.au for a copy.

Appendix 2 – Case studies

Bundoora Tennis Club

"Hard work, but very rewarding" is how Bundoora Tennis Club's President, James Copes, described their facility development project. With a total project cost in excess of $240,000, 18 months of research, meetings, budgeting and tender evaluations has resulted in the Bundoora Tennis Club having two new Plexicushion courts, new baselines on four red porous courts, upgraded fencing and new floodlighting across four courts (providing the club with eight lit courts).

"We saw our courts and infrastructure slowly deteriorating and for years we weren't quite sure what we needed to do and how to do it," said Copes.

"It was evident from talking to our local council (Banyule City Council) and Tennis Victoria that without a plan or clear directions and objectives, we weren't going to develop into the future."

The first step for the club was to prepare a strategic plan that engaged with members to identify the key issues and shortfalls with the club's existing facilities. It also highlighted the areas where the club had not been successful previously in attracting funds and support to develop their facilities.

"Through the development of a strategic plan we identified that member preferences were different, but this also presented some different opportunities," said Copes.

"We believe the Plexicushion surface will help attract a good body of coaching pupils and provide a surface to assist with their future development."

"We were also aware of the need to satisfy our older member preferences and to expand the number and quality of our Victorian Pennant teams. By retaining our red porous courts and improving them, we could accommodate all the preferences."

The strategic plan became the catalyst for all future planning, and was the backbone to the development of successful partnerships with the Banyule City Council and other funding bodies. The Council contributed $60,000, Sport and Recreation Victoria $60,000 and Tennis Australia (via its court rebate scheme) $30,000 towards the project. The remainder of project funding was contributed by the club.

It was vital for the club to have early communication with its local council at the planning stage, prior to submitting funding proposals. It was also important to make sure that any planned works aligned with the Council's strategic plan and project priorities. This was successfully achieved with this project, as the Bundoora Tennis Club had clearly communicated to the Council what they were aiming for early on and together, grant submissions were written to obtain additional funding and support.

The club had a number of hurdles to overcome along the way, including tree root invasion and a lack of power supply for additional floodlighting. Having a dedicated and independent project manager helped the club through these issues with little impact on overall project budgets and timing.

Appendix 2 – Case studies

Mr Copes believes that a project manager should be considered by every club undertaking a sizeable facility project.

“It helped us greatly in liaising with contractors and with the assessment of the various project tenders that were presented,” said Copes.

Some further words of advice from the club looking back on their project planning include:

1. Do your own research and homework – it is amazing what you can learn.
2. Use your available resources and partners and work with them.
3. Get an independent project manager (Tennis Victoria can assist you in this area).
4. Communicate what you are doing to your members through all project phases.

One final thought from Bundoora Tennis Club’s Vice-President, Matt Testolin, is to understand the timeline for construction and the impact it may have on your existing operations.

“Our courts were out of action for approximately 15 weeks during which time we hired courts from surrounding clubs and centres,” said Testolin.

This may have an impact on your overall project budget and needs to be well communicated to your members.”

Appendix 2 – Case studies

Sale Tennis Club

The Sale Tennis Club was established in 1951 and moved to its current site in 1971. By 2004 the 30 year old facility was starting to age badly. There was much to be done, but limited club funds to do it with.

With a motivated committee, the Sale Tennis Club set about rebuilding the facility.

“Our objective was to create a facility that catered to the needs of coming generations, a facility that would make our members proud and to bring family and friends together to enjoy tennis and social interaction in a quality clubhouse and surrounds,” said Robin Lowe, Sale Tennis Club’s President.

The Sale facility originally consisted of 14 en-tout-cas courts, four hard courts and six grass courts. The committee was aware of a number of issues, such as the cost of maintaining three different types of surfaces and the importance of different surfaces when developing well rounded junior players.

The club’s first step in the facility development process was to brainstorm a wish list and order the list in terms of viability, importance, urgency and potential cost. The outcome of this process was the development of a Facilities Upgrade Plan for the period 2004 - 2012. The plan focused on achievable goals under the headings of ‘Project, Objective/Outcome, Timing and Budgeted Cost’.

“There were a total of 24 projects of varying size and cost,” said Lowe.

“Our first project under the plan was completed in February 2005 and was a major shade structure.”

The club decided to upgrade the en-tout-cas and hard courts and to forgo the grass courts. The cost saving on the high maintenance grass courts was used to partially fund the upgrades on the other courts.

“Another added incentive was that we were able to implement very significant water savings on the grass courts while at the same time working with Gippsland Water to use recycled water on our en-tout-cas courts,” said Lowe.

“Sale Tennis Club has since completed 22 of the 24 projects at a cost of just over $500,000.”

The partnership formed with Gippsland Water is an example of a club gaining access to expertise and funding in areas vital to the upgrading of courts, lighting and club house.

“We recognised that our upgrade ambitions would need to be funded and that our internal resources would not be sufficient,” said Lowe.

“Our starting point was to educate ourselves as to what support was available and nominate one of our committee members to champion the funding options and explore all the available possibilities.”

Appendix 2 – Case studies

The club has now submitted over 50 grant applications.

In addition to applying for grants, important funding partnerships were formed with Tennis Victoria, Tennis Australia, Wellington Shire Council, Victorian State Government and local businesses. The club made presentations as often as possible and were not too concerned when grants were rejected as they knew persistence would eventually reward the club.

“In some instances we applied for the same grant three years in a row, improving it each time until we were successful. In short, we were relentless in our pursuit of funding to progress our development plans,” said Lowe.

“We also registered our projects with the Australian Sports Foundation so that any donations would be tax deductible.”

The club’s objective was to build quality facilities that would last more than one generation.

Capital facilities are expensive but doubly so if they have to be upgraded soon after if they aren’t constructed correctly to begin with. All of the club’s upgrades were done by quality contractors with quality materials and no shortcuts.

An added bonus for the club is that the ongoing maintenance costs have also reduced. The new facilities have aided in developing community and junior programs to help develop and support the sport of tennis throughout the region.

“We are now an active, vibrant club who participates fully in our local community,” said Lowe.

“With quality facilities we can cater for all types and levels of participation and we now provide an exciting hub for our community.”

Checklist

When undertaking your next tennis facility development project, please ensure that you have:

- [ ] Conducted a needs assessment and/or business plan for your project in conjunction with club members.
- [ ] Consulted with your local council, Tennis Victoria and other key stakeholders.
- [ ] Conducted an assessment of your site, soil and/or associated building conditions (depending on the type of project).
- [ ] Fully budgeted for your project, including securing of grant monies and provision for cost escalation and contingencies.
- [ ] Involved professional designers, technical experts and a project manager (where applicable).
- [ ] Evaluated your project to ensure you have achieved your original objectives.

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For further information regarding tennis facility development planning, please see Tennis Victoria's website **www.tennis.com.au/vic** or contact Tennis Victoria on (03) 8420 8420.

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