

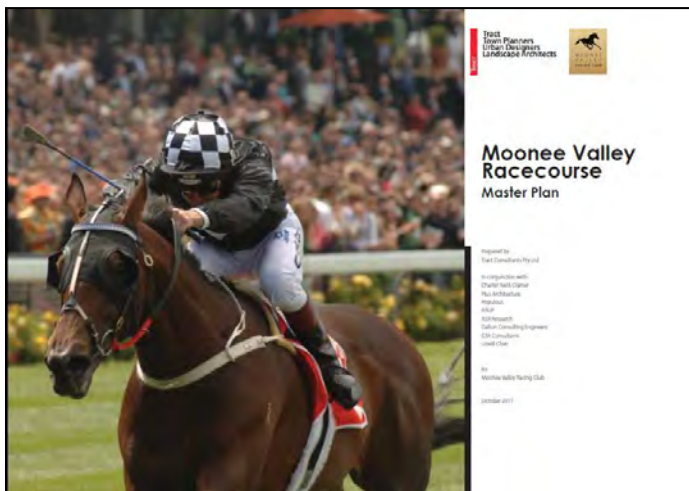
Environment and climate change assessment

of proposed Moonee Valley Racecourse Master Plan, October 2011

Initial assessment by Moonee Valley City Council

December 2011

Council understands that Moonee Valley Racecourse is seeking to rezone its land to Activity Centre Zone. As part of this application, a draft master plan has been provided as the strategic basis for the zoning request.



Council acknowledges the effort of Moonee Valley Racecourse to present the future design and development opportunities for its Moonee Ponds site.

If the rezoning is supported, Council's environment team would be able to draw on its own extensive knowledge to guide improvements to the design that would result in improved resident amenity, property values and environmental performance.

These suggestions are outlined in the following pages.

1. Environmental design and property value
2. Sustainable Water Management
3. Greenhouse
4. Wind
5. Vegetation
6. Resource Recovery
7. Transport

TRIM 11/636279

1. Environmental design and property value

The challenge

In past decades, maximising the sale value of a site was thought to be simply about increasing dwelling numbers.

This has now changed.

It is now known that greater property sale value is generated by good design incorporating resident and business needs, urban design, diversity, climate change and environmental design. Affordability is also supported through reduced household running costs and need for car ownership.

For example, recent Australian studies showed green office buildings added up to 9 per cent premium to a building's value. Combined with reduced vacancy rates and outgoings, the business case for environmental design is increasingly evident [1]. In fact, for offices and residential premises, the risk of obsolescence is great for new buildings that do not incorporate high environmental standards.

An early precinct approach further improves the business case and return on investment for environmental design. This would enable streetscapes to plan for climate change with greater shading and water sensitive urban design. It would also enable alternative energy, water and waste systems to be set out in principle, so that future buildings could more easily incorporate them into design.

Another example is US research showing that a large shade tree at the front of a house can increase the value of a house by over \$US8000 on average [2].

How the master plan proposal could be improved to meet this challenge

Guiding principles set out commitment to environmental sustainability, however it would be more effective to design and market the proposed redevelopment as a leading environmental initiative.

Precinct environmental initiatives need to be supported in early master planning. The wording in the master plan proposal is currently very weak stating that it will 'seek to consider' and 'seek to improve'. Active support for these design initiatives is essential at the master planning stage to ensure consideration throughout potential later stages. This would ensure consistency with State Government policy.

Streetscape solutions for walking and cycling need to be better set out to take into account the needs of residents. Currently it appears only the needs of racegoers are set out.

If supported by Council, the expertise of the environment team would be available to provide design advice for the site.

Recommendations:

1. Establish a vision for leading environmental design and construction commitment
2. Set out commitments to precinct based environmental initiatives including precinct sustainable water management, precinct energy demand and supply management, precinct waste and resource recovery management, precinct urban heat island and transport planning, and precinct urban ecology planning.
3. Set out clear objectives and development guidelines to address sustainable water management, greenhouse, waste, climate change, transport and urban ecology).
4. Set out performance objectives (equivalent to Australian best practice in relevant rating tools) settings for the precinct, grandstand and residential buildings.

2. Sustainable Water Management

The challenge

Large redevelopment sites offer rare opportunities to harvest rainwater and stormwater to save on valuable potable water use, while at the same time preventing waterway pollution.

By applying sustainable water management across the whole site, there could be more opportunity for comfort from trees and vegetation, greener open space and as a result healthier residents and employees.

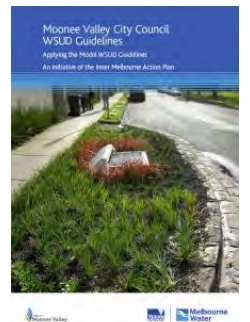
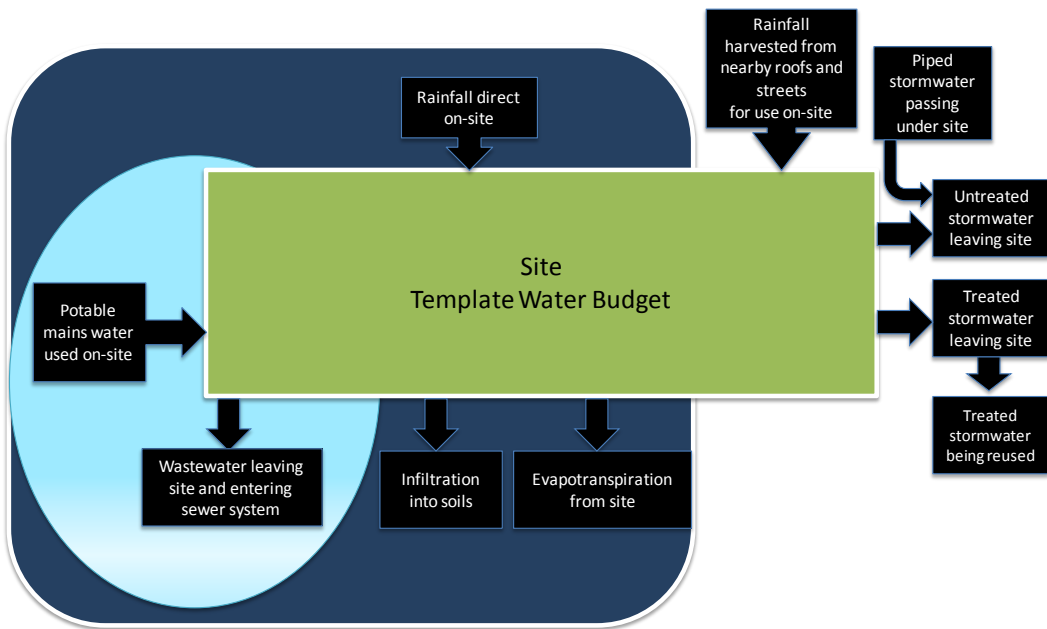
Council is committed to water saving and water quality through its *Water Strategy 2011*. Stormwater targets are supported by SEPP (Waters of Victoria) and aligned with Clause 56 of Victoria Planning Provisions.

Council is committed to water saving and water quality through its *Water Strategy 2011* [3]. Stormwater targets are supported by SEPP (Waters of Victoria) [4] and aligned with Clause 56 of Victoria Planning Provisions [5].

How the master plan proposal could be improved to meet this challenge

The master plan reflects existing stormwater harvesting arrangements at the racecourse which harvest more water than is currently needed. This excess of supply demonstrates the need for a water balance to be prepared to help realise the best potential for capturing and using the site to help improve the liveability and sustainability of the site. If the rezoning is supported, Council’s environment team would be able to work with the Racecourse to explore the best ways to use excess stormwater to reduce potable demand for water across the rest of the precinct.

A precinct water balance is provided along with *WSUD Guidelines* [7] to help design and construct to reduce potable water use, support vegetation and protect the health of the nearby Moonee Ponds Creek.



Recommendations

1. Meet best practice stormwater management standards for the whole site. Ensure stormwater supply is used nearby to either reduce potable consumption, or support new vegetation areas.
2. Undertake a precinct water balance for the racecourse, and for the precinct as a whole. This would describe base level water flows, and demonstrates scenarios for best water management.
3. Ensure buildings meet best practice water efficiency and support reuse in accordance with principles and objectives of the *Water Strategy 2011*

3. Greenhouse

The challenge

This site offers an opportunity to enable ongoing implementation of renewable energy, distributed energy, energy efficiency, sustainable public lighting and carbon sequestration solutions. If the rezoning is supported, Council’s environment team is able to work with the Racecourse to further explore these opportunities.

Environmental sustainable building design is supported by the use of performance rating tools to meet at least Australian best practice equivalent standards.

Council’s commitment to greenhouse management is set out in its *Greenhouse Strategy 2010* [7].

This assessment draws out solar passive orientation as one example of further greenhouse thinking needed.

Melbourne is a “heating” climate with residential space heating required for approximately two-thirds of the year. It is therefore desirable to find ways to bring low winter sunlight into buildings. At the same time, we need to shelter from Melbourne’s hot summer afternoons by limiting the windows directly exposed to high afternoon sun on the western facade of buildings.

Good solar passive design in Melbourne needs to maximise exposure to eastern and northern sunlight and minimise exposure to western sunlight [8].

How the master plan proposal could be improved to meet this challenge

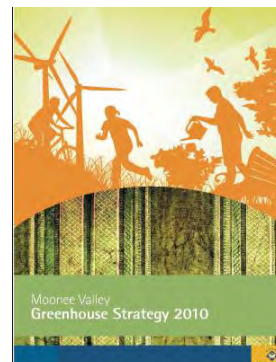
Arguably the current master plan layout of the buildings, particularly sub-precinct A to E, generally favour access to western sunlight with a majority of buildings and public ground level areas shaded from eastern and northern sunlight.

This is the opposite of optimal and does not provide good early guidance for the necessary ESD requirements that would need to be met at subdivision, planning and building permit stage. Not only is this detrimental for users within buildings, but also for users of public space due to shading impacts. With tall buildings proposed to the east, morning sun would be blocked to the open space and smaller buildings to the west. In the afternoons (hottest part of the day) both the tall and short buildings would receive direct sunlight. Design solutions are needed to address this.

The buildings in sub precincts F and G have better solar passive orientation. However, racegoers in the stands on the southern side of these buildings may be less fortunate. The southern sides of buildings in Melbourne are arguably the least comfortable in the cooler months being exposed to wind directions frequently bearing rain (south-westerly) as well as receiving little or no direct winter sunlight. It is suggested the proposed orientation be carefully considered in light of the combination of exposure to the least favourable elements (wind and rain) and lack of exposure to the most favourable (winter sun) for racegoers.

Recommendations

1. Greater commitment to greenhouse management in the objectives and development guidelines. This includes commitment to energy modelling across the precinct and guidelines to support the investigation of distributed energy generation (cogeneration or trigeneration opportunities), renewable energy installations, and energy efficiency design and operations.
2. Building envelopes to be reconfigured to support better passive solar orientation and design in anticipation of future ESD requirements at subdivision, planning and building permit stages.
3. Public lighting to comply with Moonee Valley’s *Sustainable Public Lighting Guidelines*.



Greenhouse (Note: these recommendations support the advice set out in the Urban Design Review (McGauran Giannini Soon Architects Pty Ltd) [16])

5. Wind

The challenge

Changing the built form causes changes to ground-level wind conditions. If not planned well, these changes can cause streetscapes, open space and precincts to become unpleasant and, in some cases, unsafe for users. [9][10]

High walls directly adjacent to open space and streetscapes should be avoided. Towers need to be set back from all sides on podiums, and greater articulation is needed to slow and deflect wind. The general wind conditions are a result of the overall form of the buildings. Small canopies and fins may shelter localised areas but have little effect on large scale wind patterns around towers.

Natural ventilation of dwellings can help improve user comfort and energy efficiency. This works effectively when the wind impacts outside the building are understood and planned around.

How the master plan proposal could be improved to meet this challenge

The Master Plan generally displays a lack of knowledge of design for wind effects around high-rise developments. Diagram 5 of the master plan shows a sketch of an “optimal” tower layout for ground level wind effects which is, in fact, likely to be an exceeding poor performing layout due to the close proximity of the towers and lack of tower set-back on the podiums on all sides.

Initial consideration of building form and height in Sub-Precincts A to E indicates that wind and shadowing would detrimentally affect users. It is likely that with the proposed combination of size, orientation, exposure and proximity of the taller towers to each other there may be ground level winds generated in excess of widely accepted safety criteria within the development.

The building form and height for Sub-Precincts G and F are better, however it is likely that there would be wind problems in the north-south walkways between the buildings. The principle of 15m gap between buildings of 8m and 15m high is inadequate and is likely to result in high wind conditions.

It is also considered that wind from the proposed building form and height would compromise comfort of racecourse patrons.

Exposure to high winds within the precinct would also make it harder to achieve energy efficiency within buildings as unwanted draughts and airflows disrupt user comfort. In large buildings with many occupants natural ventilation needs to be tightly defined and centrally managed if it is to reduce energy demand. Simply having openable windows is not sufficient to ensure good natural ventilation and energy efficiency. [11]

Recommendations

1. Reconsider building heights, open space and streetscape design in the context of qualified wind modelling, taking into account likely wind climate impacts
2. Wind comfort and safety criteria for the development to be assessed by a qualified wind engineer to meet at least minimum criteria for pedestrian safety (annual average maximum gusts not exceeding 23m/s [17], annual average maximum hourly mean wind speeds not exceeding 15m/s [18]).
3. Guiding principles for landscaping to provide users with optimum comfort throughout site (microclimate design).

4. Vegetation

The challenge

The climate is changing and will continue to do so. For Moonee Valley and others this will likely mean more droughts, heatwaves, extreme storms, and flooding. Our cities, including any future development of the Moonee Valley Racecourse precinct, needs to be ready for this in many ways. Two examples are:

- a. *Urban heat island*: cities are hotter than rural areas because road and building surfaces absorb more heat than vegetation. This increase in air temperature has health and wellbeing impacts for the community, particularly the vulnerable.
- b. *Urban food growing*: in coming years, food supply and prices are expected to be impacted by climate change, particularly through reduced and unpredictable rainfall, increasing temperatures, and extreme weather events. Combined with urban expansion into farmland and resource pressures there is a growing demand by residents to grow food close to home.

Council's commitment to increased vegetation and habitat is set out in its *Environment Sustainability Plan 2007* [12] and *Street Planting Strategy* [13]. And our climate risks are set out in *Climate Change Risk Assessment-WAGA 2011* [15].

How the master plan proposal could be improved to meet this challenge

To maximise urban amenity and community wellbeing, there is a need to maximise vegetation in our cities. This means more shade trees, more parks and more vegetation in streetscapes and buildings.

This additional vegetation is best integrated into the urban fabric at this early design stage. The additional vegetation could be watered passively by stormwater harvesting (see *WSUD Guidelines* [6]). Council is developing a water model for the Moonee Ponds Activity Centre which could assist with vegetation planning.

The additional vegetation would encourage more walking by residents which would reduce traffic loads, build community, increase safety and help improve personal health of incoming residents.

The vegetation also supports the urban ecology potential of the site far beyond the initial flora assessment in the proposed master plan's site analysis. See *Urban Ecology Conversation Starter* [14] for greater solutions in biodiversity opportunities across the site such as increasing biodiversity of insects and birds by planting species that provide habitat or food. Council could work with the Racecourse to develop this and define related maintenance impacts.

There is an opportunity for the racecourse precinct to be a leading development that features design elements that help support a resilient, healthy and sustainable food system.

Recommendations

1. Set out guiding principles for building and urban design to address the likely impacts of climate change. This includes building resilience to storms and drought, and urban ecology and food growing options.
2. Ensure all streetscapes maximise vegetation to reduce urban heat island impact.
3. Ensure streetscapes and all other open areas incorporate water sensitive urban design to support the watering needs of street trees and protect Moonee Ponds Creek.



6. Resource Recovery

The challenge

Master planning provides an opportunity to help event organisers, residents and businesses to generate less waste, along with opportunities to reuse and recycle the goods, materials and equipment in place.

There are limited resources available to cope with increased development and 'reduce, reuse, recycle' philosophy [15] helps to make better use of them, in addition to reducing costs for developers, businesses and residents.

This progressive waste management and resource recovery approach could be applied from demolition, construction, operation and maintenance for all the users of the precinct.

How the master plan proposal could be improved to meet this challenge

Council commends the Racing Club's enthusiasm for precinct-wide waste technologies, and if the rezoning is approved could provide support in exploring these ideas.

Further support for waste reduction includes exploring public and private recycling facilities within the Racecourse and within the guiding design criteria for building and urban design.

Establishing a 'reuse hub' within the precinct would help provide a great service and resource for the future community. This could be a great source of second-hand furniture, children's craft resources, bicycles and other such goods. Again, if the rezoning is supported, Council is able to assist in exploring this option with the Racecourse.

Apartments should be designed to have garden friendly balconies wherever possible. This enables local food growing.

Recommendations

1. Commitment to highest standards of waste reduction, including possibility of zero-waste target. This includes waste collection systems that allow for separation and education at points of disposal.
2. Commitment to recycling facilities to make this the most convenient disposal for residents. It is advised to adopt use of Sustainability Victoria's *Best Practice Guide for Waste Management in Multi-Unit Developments* [19]. In addition to recycling explore the feasibility of 'reuse hub' within the site.
3. Commitment to recycling facilities to make this the most convenient disposal for business. This includes shared waste and recycling facilities for businesses, such as shared cardboard, comingled and waste bin compactors.
4. To future proof the development, ensure the waste management services accommodate future food waste recycling.
5. Commitment to at least 90 per cent recycling of demolition waste, and best practice construction practices to minimise material waste and maximise durability. Recommend use of EcoSpecifier [21] for useful material selection.
6. Commit to green purchasing principles, for example minimum recycled content specified for concrete. The EcoSpecifier tool provides valuable guidance for this.



7. Sustainable Transport

The challenge

Good transport management supports residential needs and good event management, while at the same time providing great environmental benefits. This includes reduced air and water pollution, reduced greenhouse emissions and reduced land requirements.

Precinct planning opportunities are vital for putting sustainable and legible transport solutions in place that will improve the efficiency and sustainability of suburbs. This approach is driven by the need to reduce car trips (and ownership) by promoting sustainable transport solutions including walking, cycling, and public transport.

How the master plan proposal could be improved to meet this challenge

For venue patrons to always consider public transport as the best option for getting to the Racecourse it is important to have urban design solutions that guide people from the nearest train, bus and tram stops to the venue. For the Moonee Valley Racecourse site, it is considered that an attractive tree-lined boulevard directly from the tram stop needs to be considered so that people easily know where to go.

Given the access to public transport, there is a need to reduce car emphasis. Most streets should have wide footpaths, and selected streets should apply 'shared zones' with 10kph speed limits that allow vehicle access, but do not encourage vehicle use. It is these urban design solutions that start to improve the quality of the open space and the value of the development as a whole.

Cycle routes and walking routes need to be carefully designed. The racecourse could have a bicycle valet service providing bike parking, lockers and shower facilities. This would help future proof for future venue requirements to demonstrate sustainability features. All residential buildings are to provide bike lock-up services, although again, a business opportunity may arise to provide a bike hub that centrally stores and assists with bike riding for residents. If the rezoning is supported by Council, staff would be able to help explore these solutions.

Car share services, recharge points for mobility aids and electric charging, bike share are all essential services for the precinct. Charge points play an important role in distributed energy solutions for the precincts. This all ensures there is less need for car travel and ownership, which in turn means more land available for other needs. Any car parking should be designed to enable future sharing where possible – that is, avoid carparks that are rarely used.

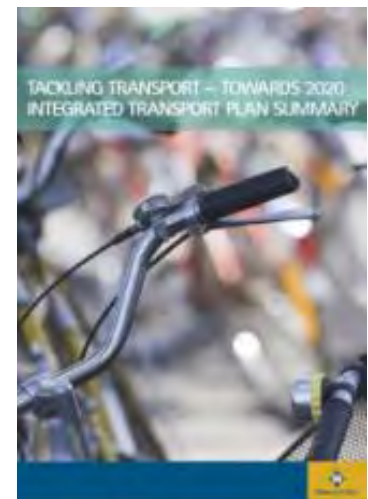
Recommendations

1. Clear priority and design solutions given for sustainable transport in public and private areas. Reduced emphasis on the needs of car drivers and carparks designed to share their use, incorporate landscaping and sustainable water management if outdoors.
2. Provision of bike share, car share, charge points, and end-of-trip bike facilities in the most convenient locations across the precinct.
3. Walking desire lines and routes carefully planned, designed and encouraged.

Note:

These recommendations support Moonee Valley Racecourse Traffic Study – Technical Review Nov 2011 (CPG) which advises that no improvement measures had been provided in the master plan in response to forecast traffic increases.

These recommendations also support Moonee Valley Racecourse Redevelopment Master Plan Peer Review (MGS) which advises that better clarity of pedestrian movement is needed.



References

- [1] Australian Property Institute (2011) *Building Better Returns*
- [2] Donovan, Butry (2010), *The effect of urban trees on the rental price of single-family homes in Portland, Oregon*, Urban Forestry and Urban Greening, http://donovan.hnri.info/pubs/donovan_and_butry_rent.pdf
- [3] Moonee Valley City Council (2011), *Water Strategy 2011*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [4] EPA (2003), *State Environment Protection Policy, Waters of Victoria*, <http://www.epa.vic.gov.au/water/epa/wov.asp>
- [5] Department of Planning and Development (2011), *Victoria Planning Provisions*, State of Victoria
- [6] Moonee Valley City Council (2011), *Water Sensitive Urban Design Guidelines 2011*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [7] Moonee Valley City Council (2010), *Greenhouse Strategy 2010*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [8] Department of Climate Change and Energy Efficiency (2010), *Your Home Technical Manual 4th Edition*, Commonwealth of Australia
- [9] Department of Sustainability and Environment (2004), *Guidelines for Higher Density Residential Development*, State of Victoria
- [10] Aynsley R., Melbourne W. H., Vickery B. J. (1977), *Architectural Aerodynamics*, Applied Science Publishers
- [11] King S. (2011), *Designing for Natural Ventilation*, Energy Smart Buildings, Volume 2 Issue 2.
- [12] Moonee Valley City Council (2007), *Environment and Sustainability Plan 2007-2012*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [13] Moonee Valley City Council (2007), *Street Planting Strategy*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [14] Moonee Valley City Council (2011), *Urban Ecology Conversation Starter*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [15] Moonee Valley City Council (2008), *Waste Management Plan 2008-2014*, <http://mvcc.vic.gov.au/about-the-council/environment/environment-strategies.aspx>
- [16] McGauran Gianni Soon Architects Pty Ltd (2011), *Urban Design Review*, commissioned by Moonee Valley City Council
- [17] Melbourne W.H. (1978), *Criteria for Environmental Wind Conditions*, Journal of Industrial Aerodynamics, Vol 3 pp 241-249
- [18] Alan G Davenport Wind Tunnel Group (2007), *A Brief Outline of Wind Tunnel Testing*, University of Western Ontario
- [19] Sustainability Victoria (2009), *Best Practice Guide for Waste Management in Multi-Unit Developments*, State of Victoria.
- [20] EcoSpecifier Australasia, <http://www.ecospecifier.com.au/>