

6. Recommendations

The following recommendations are proposed to deliver on the identified priorities.

Recommendation 1

Update local policies to reflect the revised policy position. This requires updating the Municipal Strategic Statement and Clause 22.02 Sunlight Access to Public Spaces

It is important that the local strategic policy context for the municipality establishes a clear priority for sunlight access. Clause 22.02 should be updated to incorporate:

- The recognition that sunlight is essential for the health and wellbeing of residents and the ecological health of our ecosystem
- The need to provide access to sun in parks in winter when people need it the most
- The need to balance this with support for established development intensification strategies in the inner city
- Removal of the current tiered approach to protection of sunlight access which is based loosely on the scale or regional significance of the park, and establish clear objectives to provide distributed access for all residents and workers to sunlight within a local park in walking distance from their home or workplace.
- Acknowledge the ecological benefits of sunlight access to vegetation, water bodies and wildlife
- Acknowledge that the use of open spaces will increase and change over time, particularly in growth areas
- Acknowledge the importance of sunlight within parks and streets to liveability broadly and the subsequent economic and social benefits of the creation of an attractive and welcoming public realm
- Acknowledgment of the benefit of density controls in supporting the protection of parks from overshadowing. This is because density controls encourage a diversity of design responses and allow the mass of a building to be located within a development site where it will have the least overshadowing impact.

While streets are outside of the scope of this study, they are important public spaces and until further work is undertaken (see Recommendation 5), they should remain with a degree of protection within the local policy.

Recommendation 2

Introduce a municipality wide Design and Development Overlay that manages sunlight access to open spaces

Prepare a consolidated Design and Development Overlay for the municipality that:

- Establishes a consistent approach to overshadowing across the municipality
- Implements the sunlight protection levels as outlined in Map 13) of this report which would replace all existing sunlight access controls within the Melbourne Planning Scheme that apply to the study area
- Brings together these new controls with the sunlight access controls introduced through Amendments C270 and C245 (Central City and QVM) into one Design Development Overlay. This ensures that any development that can impact a park is considered regardless of which DDO the building or park is located within
- Establishes the requirement to prepare a sunlight impact assessment where a park may be overshadowed for all developments over 9 metres in height.

Recommendation 3

Introduce interim controls for the protection of parks vulnerable to winter overshadowing

There are 14 parks that are vulnerable to unacceptable overshadowing in the winter months that would be caused by development built to the existing height controls.

To protect winter access to these parks it is recommended to seek interim controls which put in place the proposed winter access controls on the affected parks which are:

- University Square
- Lincoln Square
- Buncliff St park / North Melbourne Recreation Centre
- Canning St and Macaulay Rd Reserve
- Clayton Reserve
- Gardiner Reserve
- North Melbourne Football Ground / North Melbourne Recreation Pool
- Bedford Street Reserve
- Courtney Street Reserve
- Fitzroy Gardens
- Yarra Park
- Stawell Street Park
- Railway Place and Miller Street Park
- Ron Barassi Snr Park

Further work

The following recommendations are outside the scope of this study, however are critical to ensuring the long-term protection of sunlight to public spaces across the study area.

Recommendation 4

Prioritise investigation of potential locations for future parks that are likely to be subject to overshadowing due to current or proposed height limits.

There are 12 parks that are located in urban renewal areas that are in areas where the height limits may compromise sunlight access (see map 13).

This should be investigated and potential locations identified to provide guidance for necessary sunlight access protection otherwise the opportunity to protect winter sunlight access to these parks which are predominantly within high growth areas will be lost.

This needs to focus on providing some certainty so that it can meaningfully influence future development proposals that may overshadow these potential park locations.

Recommendation 5

Investigate other sunlight sensitive resources, in particular streets, within the municipality that should be considered for sunlight protection.

The consideration of sunlight access to streets is not part of the scope of this study, however the current Sunlight to Public Spaces policy provides some protection to streets between 11am-2pm at the September equinox.

The city's streets are important parts of the public realm and provide additional, often incidental, opportunities for people to access sunlight as they move about the city.

Streets form the overwhelming majority of Melbourne's public realm and provide opportunities for people to access sunlight for their general wellbeing and health (to receive their 'dose' of sunlight) and for the ecological health of the city. Streets also provide a critical role in supporting the social life and economic activity of the city. The identification of key streets, such as local activity centres, that already benefit from sunlight access should be addressed.

Many of the city's streets have also been identified as opportunities for future open space and need to be protected for potential overshadowing. The Council has demonstrated a successful program of turning streets into parks - the 'grey to green' program. Maintaining sunlight to streets will be critical in supporting the continuation of this approach.

Sunlight access to streets is also an important part of what makes the city attractive, including sunlight on heritage building facades.

This work should consider:

- Existing active streets within local centres, where sunlight is part of making these streets a success, e.g. local centres, cafes streets
- Significant buildings and building facades where sunlight is an important contributor to character,
- Heritage attributes (e.g. sandstone buildings and stained glass windows) and an appreciation of a place.

This work will need to determine the appropriate level of sunlight protection (time of year and day) for nominated locations.

What do they do in other cities? Application of sunlight controls

New York considers sunlight access in regards to open space, historic and cultural resources, and natural areas. The City Environmental Quality Review (CEQR) which guides the application of overshadowing controls states: 'Sunlight and shadows affect people and their use of open space all day long and throughout the year, although the effects vary by season. Sunlight can entice outdoor activities, support vegetation, and enhance architectural features, such as stained glass windows and carved detail on historic structures.'

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Appendices

Appendix A: Health impacts

The negative health impacts of too much sun exposure

Skin

Australia has one of the highest rates of melanoma in the world: each year, skin cancer kills nearly 2,000 Australians and over 12,000 new diagnoses of melanoma are made. Sunburn increases the risk for melanoma, while cumulative and intermittent sun exposure increases the risk for non-melanoma skin cancers (squamous cell carcinoma and basal cell carcinoma, respectively) (Byrne, 2014).

Chronic UV exposure can lead to actinic keratoses, which appear as rough scaly growths on the skin and occur more frequently in people with fair skin. These typically require removal to avoid the risk for progression into skin cancer (Lucas et al., 2015). Chronic UV exposure also causes early aging of the skin due to damage of proteins that maintain skin strength and elasticity, such as elastin and collagen (Lucas et al., 2015).

Eyes

Chronic exposure to UVB radiation can cause damage to the eyes and vision. These range from inflammation of the cornea (photokeratitis), inflammation of the conjunctiva (photoconjunctivitis), invasive growths of the conjunctiva (pterygium) and cortical cataracts (Lucas et al., 2015). Greater exposure to the sun also increases the risk for age related macular degeneration (Sui et al., 2013).

Immune function

UVA and UVB both cause DNA damage and can alter immune function (Byrne, 2014). Too much sun exposure can cause innate immune responses to become overactive, while acquired immune (memory) responses become suppressed. This can result in skin reactions (such as polymorphic light eruptions) and reactivation of persistent or latent infections (Lucas et

al., 2015), and can contribute to the growth and spread of skin cancers (Bald et al., 2014).

The positive health impacts of moderated sun exposure

Impacts of Vitamin D on physical health

1. Bone Health

Vitamin D is essential for optimising bone health and muscular function through its principle roles in maintaining calcium and phosphate levels. Vitamin D deficiency causes impaired bone mineralisation, resulting in osteoporosis and osteomalacia (bone softening) in adults and rickets in children (Pludowski et al., 2013).

In older people, Vitamin D deficiency predicts falls, fractures, muscle weakness, reduced physical function and accelerated losses in muscle mass and strength (Pludowski et al., 2013).

2. Cancer risk

The risk of malignant melanoma and exposure to UV radiation is reduced with non-burning sun exposure, while sunburn increases the risk (Gandini et al., 2005). The risk of many other types of cancer are reduced with sun exposure and adequate Vitamin D levels. These include colorectal, breast, prostate, non-Hodgkin's lymphoma and bladder cancer (Hoel, Berwick, de Gruijl, & Holick, 2016).

3. Diabetes type 2 and Metabolic syndrome

A recent analysis of Victorian data collected from over 3000 adults found lower vitamin D levels were associated with increased blood levels of two markers indicative of diabetes risk (fasting plasma glucose and glycated haemoglobin), independent of other sociodemographic, dietary and clinical risk factors for diabetes. In adults with the highest (sufficient) Vitamin D levels, the risk of high fasting plasma glucose was

up to 40% lower, indicating decreased diabetes risk (Pannu, Piers, Soares, Zhao, & Ansari, 2017).

A number of other studies show Vitamin D deficiency increases the risk of diabetes type 2 and metabolic syndrome (a cluster of medical conditions associated with the development of diabetes) (Gandini et al., 2005). This increased risk is not related to obesity or other potential factors that could increase the risk of this condition.

4. Cardiovascular disease

Studies report a doubling of the risk of cardiovascular events in people with moderate to severe Vitamin D deficiency (Wang et al., 2012). This is not explained by other risk factors for cardiovascular disease, such as obesity and lack of physical inactivity outdoors, which are also associated with lower Vitamin D levels.

5. Oral health

The formation of healthy teeth and gums and continued oral health require adequate calcium and phosphorus absorption, which is regulated by Vitamin D (Grant et al., 2015). Adequate Vitamin D levels can also help avoid periodontal disease and tooth cavities.

6. Alzheimer's Disease and Dementia

Moderate to severe Vitamin D deficiency increases the risk of dementia by approximately 50% compared to those with adequate Vitamin D levels, while severe deficiency more than doubles the risk of Alzheimer's disease (Pludowski et al., 2013).

7. Pregnancy and birth outcomes

Vitamin D deficiency in pregnancy occurs in over 50% of Australian women (Daly et al., 2012). Maternal Vitamin D deficiency is associated with poor pregnancy outcomes, including pre-eclampsia and hypertension in pregnancy, gestational diabetes, increased rates of Caesarean section and preterm delivery (Ebeling, 2011).

Low maternal Vitamin D levels result in low levels in the developing fetus and infant as the mother is the only source of fetal Vitamin D. Maternal Vitamin D deficiency increases the risk of a small birth weight and rickets in infancy. These effects are long lasting – these children show reduced bone mineral content at age 9 years (Ebeling, 2011).

8. Immune function

The immune suppression properties of Vitamin D mean that sun exposure and increased Vitamin D levels result in improvements in infections and many inflammatory conditions including asthma, skin disorders (psoriasis, atopic dermatitis), inflammatory bowel disease, infections and type 1 diabetes (Pludowski et al., 2013).

Impacts of Vitamin D on mental health

Low levels of Vitamin D are observed in people with depression, with some studies reporting a doubling of depression risk in groups with low versus high vitamin D levels (Anglin, Samaan, Walter, & McDonald, 2013). Longer periods of sunlight are associated with decreasing levels of symptom distress (Beecher et al., 2016).

Seasonal Affective Disorder (SAD), a clinically-recognised category of depression, is more common in the winter months when sunlight hours are reduced. Symptoms include loss of energy, appetite changes, lethargy, difficulty concentrating, and irritability. While the exact causes of SAD are unclear, reduced sunlight causes changes in normal circadian light-dark rhythms, including the production and actions of many hormones and neurotransmitters that regulate mood, energy, appetite, concentration, memory and sleep cycles (Wirz-Justice, 2017).

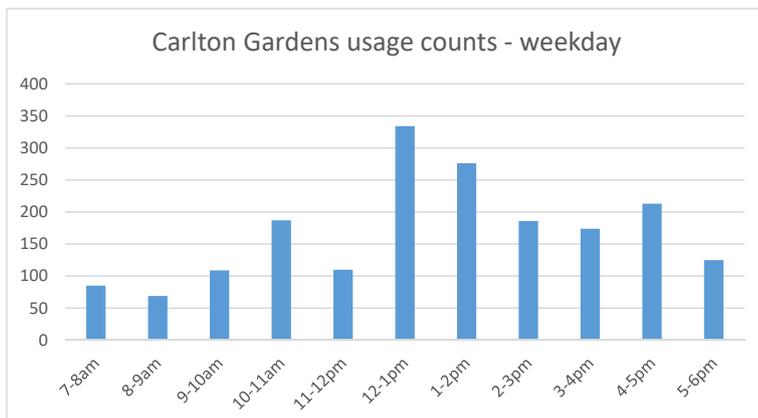
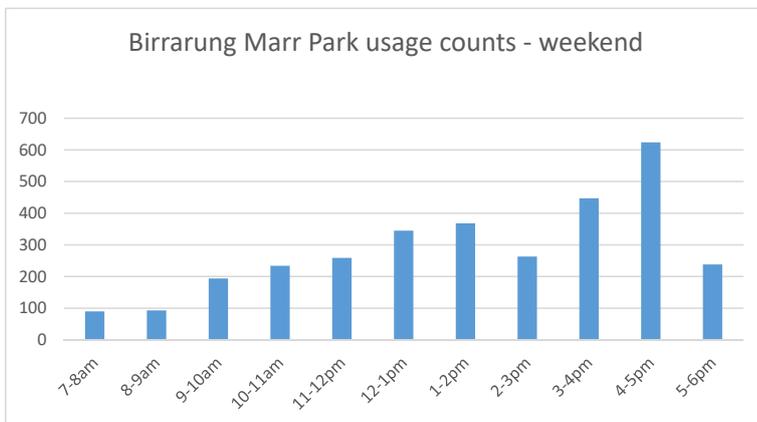
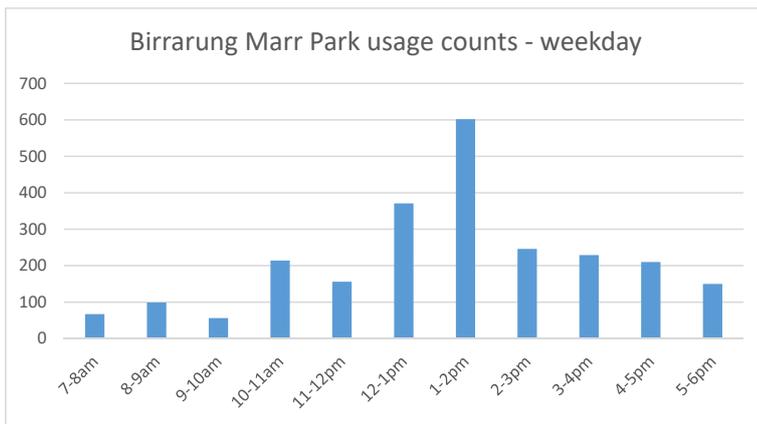
Exposure to bright light is the most effective way to treat SAD, and works faster and without the side effects of pharmacological treatments (Wirz-Justice, 2017). Light exposure in the morning rather than the evening

hours is more effective in normalising disrupted circadian rhythms that accompany SAD. One study demonstrated that just one hour of natural outdoor light is effective in reducing the depressive symptoms associated with SAD (Wirz-Justice, 2017).

Increased exposure to sunlight has been associated with decreased feelings of tiredness and decreased feelings of irritability, nervousness, hostility, distress and being afraid and upset (Denissen, Butalid, Penke, & van Aken, 2008). In adults working over 20 hours a week, direct exposure to sunlight had a greater positive effect on mood, job satisfaction and commitment to their organisation than exposure to indirect or no sunlight or natural elements alone (An, Colarelli, O'Brien, & Boyajian, 2016).

Appendix B. Park usage data

Park usage data - See IOSS 2017.



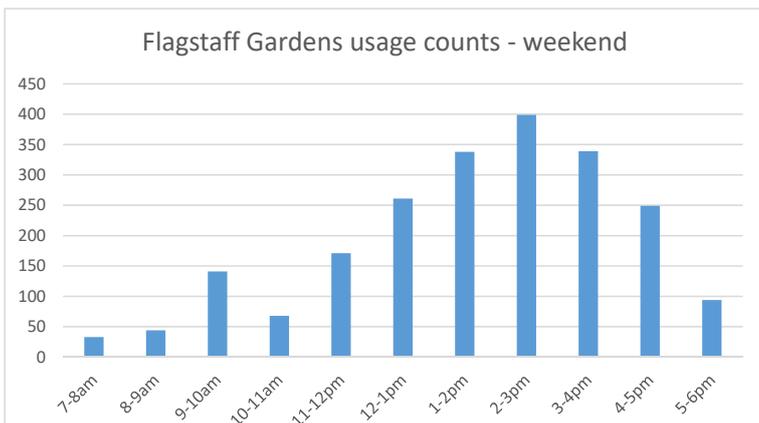
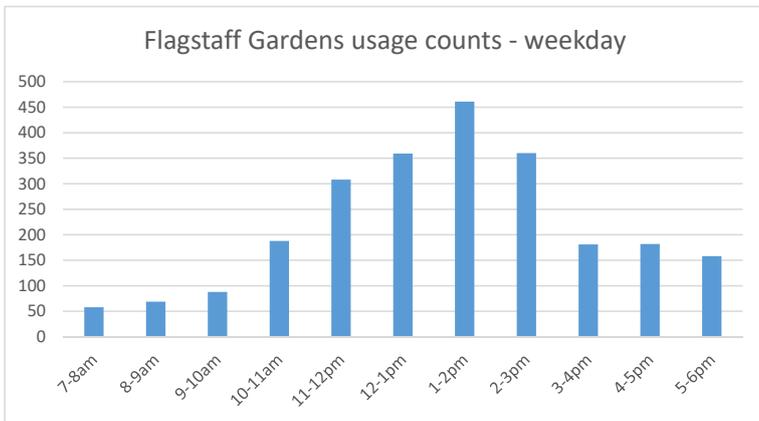
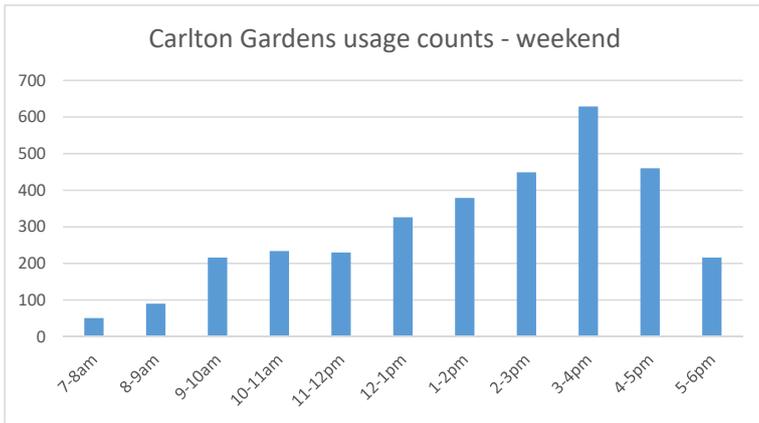


Figure 36 Park usage data sourced from google, August 2017.

Powlett Reserve, East Melbourne

Wednesday: 15 mins to 1.5 hours

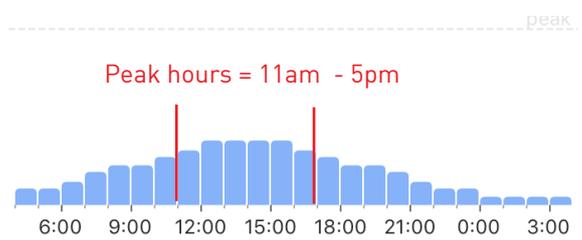


Saturday: 15 mins to 1.5 hours

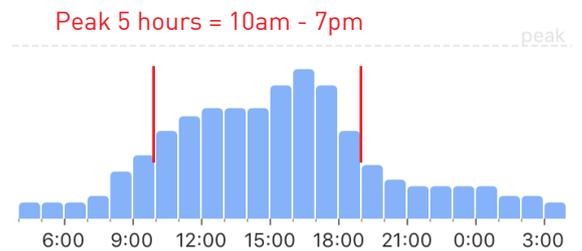


Royal Park

Wednesday: 45 mins

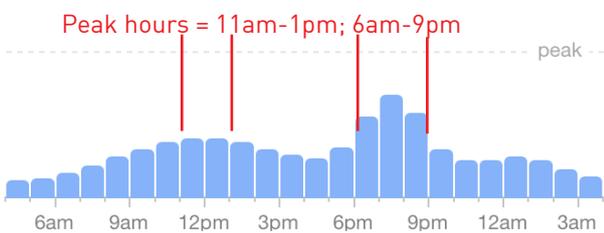


Saturday: 45 mins



Ron Barassi Snr Park

Wednesday: 1 hour

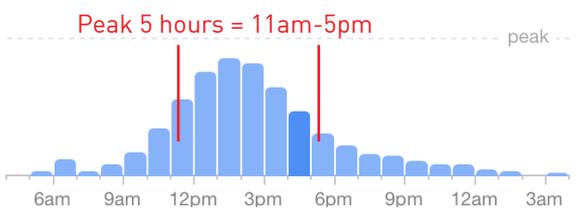


Wednesday: 30 mins



University Square

Wednesday: 30 mins



Saturday: 1 hour



Errol St Park, Nth Melbourne

Wednesday: 30 mins

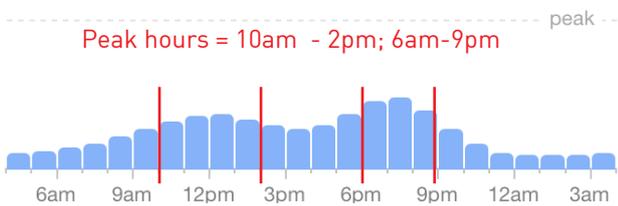


Saturday: 30 mins

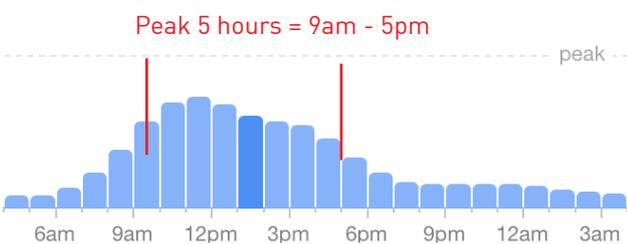


Fawkner Park

Wednesday: 1.5 hours



Saturday: 1.5 hours



Appendix C: VCAT case studies

Case 1 - DEXUS Property Group Ltd v Minister for Planning (18 May 2017)

Background

The planning permit application sought the demolition of the existing building and the construction of a multi-storey mixed-use building (comprising dwellings, car parking, retail and offices) at 32-44 Flinders Street, Melbourne. It included two towers with the building fronting Flinders Street proposed at a maximum height of 191.5 metres (54 levels).

The planning permit application was lodged before the commencement of Amendment C262 therefore, the pre-Amendment C262 version of Clause 22.02 was considered in the assessment, which required that development proposals are assessed against standards including:

- 'Development should not reduce the amenity of public spaces by casting any additional shadows on public parks and gardens, public squares, major pedestrian routes including streets and lanes (including all streets within the retail core of the Capital City Zone), and privately owned plazas accessible to the public between 11:00am and 2:00pm on 22 September.'

In addition, the pre-Amendment C262 version of Schedule 1 to the Capital City Zone (CCZ1) included the following permit requirement:

- 'To construct a building or construct or carry out works which would cast a shadow between 11.00 am and 2.00 pm on 22 March and 22 September over public space, public parks and gardens, public squares, major pedestrian routes including streets and lanes, and privately owned plazas open to the public. A permit may only be granted if the responsible authority considers the overshadowing will not prejudice the amenity of those areas.'

On the basis of consideration of the pre-Amendment C262 version of Clause 22.02 and CCZ1, the Minister for Planning issued Planning Permit 2014/70139 on 26 July 2016 with the following condition relating to sunlight to Birrarung Marr:

- 1(b) The maximum height of the Flinders Street building lowered to 175 metres to Australian Height Datum (AHD) to reduce overshadowing over Birrarung Marr. The sloping architectural form of the tower's crown must be retained.

The applicant, DEXUS Property Group Pty Ltd (DEXUS) sought a review of condition 1b) at VCAT. In support, DEXUS argued that Birrarung Marr is not highly patronised (particularly in winter) as it functions primarily as a pedestrian thoroughfare, the areas most patronised (such as Art Play) are already overshadowed and the grassed terraces were not used in the winter months due to evapotranspiration levels.

Both the Minister for Planning and the City of Melbourne disagreed with this view and argued that the proposal would have an adverse effect on Birrarung Marr if the Flinders Street building was not lowered in height in accordance with condition 1b).

In addition to the assessment of existing versus proposed overshadowing of Birrarung Marr, the VCAT decision includes considerable discussion regarding the transitional provisions of Planning Scheme Amendment C262 and C270 as they relate to sunlight to public spaces.

VCAT Decision

To assess the opposing views of the function and existing overshadowing of Birrarung Marr, VCAT conducted a site visit at about 12 noon on a sunny 4 May 2017 and found it was well patronised, not primarily functioning as a pedestrian thoroughfare and that existing shadows would not justify additional overshadowing. On the basis of this site visit, the VCAT decision states:

'We consider the effect that another shadow will have, adjacent to the current one and extending further than the one already present, will cause unwarranted loss of sunlight to Birrarung Marr particularly at the 191.5 metre height proposed during the winter months. The 175 metre tower will regrettably also cast a shadow, but we believe that it is a more acceptable outcome than the higher form proposed.'

We concede that city parks are vulnerable to overshadowing, particularly in dense and high cities such as Melbourne. But we do not agree this means that protection of sunlight to open space should not be given priority where possible.

The cumulative effects of a wall of towers at Flinders Street is also an issue we believe must be taken into account in making our findings. We do not agree that just because one tower already overshadows the park that another will not make much difference. We go back to the diverging views put forward by the applicant and the Minister and Council about the function of the park.

We disagree with DEXUS that Birrarung Marr has the primary function of being a thoroughfare, ostensibly a walkway to the football on cloudy cold winter afternoons where the public is moving through quickly and rugged up against the elements. We believe this argument detracts from the many other uses put forward by others, including experts, as well as what

we observed on site. To suggest that the role of the park is limited in this way and it is not an important city park patronised for other passive and active recreation uses is simplistic and unconvincing.

The park will experience more overshadowing from development of the review site in any event and we consider the decision to limit this extent by way of condition 1(b) is the right one for the public and for the future of Birrarung Marr as it continues to evolve.'

It is also noted that despite complications arising from the transitional provisions associated with Amendment C262 and the subsequent Amendment C270, the VCAT decision states that:

'When the SPPF and LPPF are considered as a whole, together with the general provisions of clause 65.01 in terms of the orderly planning of the area and the effect on the amenity of the area (with the area in question being the public open space of Birrarung Marr) we find that the inclusion of condition 1(b) represents a balanced and acceptable outcome, which allows some additional overshadowing at Birrarung Marr, but not unreasonable overshadowing.'

Implications

As noted above, the VCAT decision includes considerable discussion regarding the transitional provisions of Planning Scheme Amendment C262 and C270 as they relate to sunlight to public spaces. Of current relevance, Amendment C270 removed the above-mentioned pre-Amendment C262 version of CCZ1 permit requirement relating to building or works which would cast a shadow between 11.00 am and 2.00 pm on 22 March and 22 September over public space, public parks and gardens, public squares, major pedestrian routes including streets and lanes, and privately owned plazas open to the public. In addition, the Amendment C270 version of Clause 22.02 states that development should not cast additional shadow

across a list of public spaces including Birrarung Marr at key times and dates identified in the planning scheme. The Amendment C270 version of DDO10 states that a permit must not be granted for buildings and works which would cast any additional shadow across Birrarung Marr between the hours of 11am to 2pm and 22 April to 22 September, unless the overshadowing will not unreasonably prejudice the amenity of the space.

The VCAT decision considered the current provisions since Amendment C270 and stated that:

'We find that removing condition 1(b) would result in an outcome in terms of additional overshadowing at Birrarung Marr that would be contrary to the findings of this report and would not now be permitted pursuant to DDO10. In the interests of net community benefit, we do not consider that this additional overshadowing should be permitted. We find it would undermine the achievement of the policy outcomes that Amendment C270 seeks to implement.'

In fact, if DDO10 was to be applied to this application, the height of the building would need to be reduced much more substantially than required by condition 1(b). Having regard to figures 1 and 2, it can be seen that even at the reduced height of 175 metres, the building will still cast additional shadows over Birrarung Marr between the hours of 10:00am and 2:00pm during some of the time between 22 April to 22 September. Thus, the applicant has, in fact, obtained the benefit of the transitional provision in DDO10 with the grant of the permit even with condition 1(b).'

This finding indicates that VCAT would implement the requirements of the current (Amendment C270) version of Clause 22.02 and DDO10 despite the statement 'unless the overshadowing will not unreasonably prejudice the amenity of the space'. However, Birrarung Marr is specifically identified whereas some public spaces would fall into the more general third tier or

'Other Public Spaces within the municipality' defined as 'any public space, public parks and gardens, public squares, major pedestrian routes including streets and lanes, open spaces associated with a place of worship and privately owned plazas accessible to the public'.

Case 2 - 10 Wellington Parade Pty Ltd v Melbourne CC (24 August 2015)

Background

Planning permit application TP-2014-579 sought the demolition of an existing building; construction and use of a multi-storey building for dwellings; reduction of three car parking spaces; variation of the bicycle facilities requirements; and use of the land located within the rail reserve (PUZ4) for the purpose of dwellings at 10 Wellington Parade, East Melbourne.

The applicant, 10 Wellington Parade Pty Ltd, sought a review due to the failure to grant a permit within the prescribed time. Prior to the hearing, the City of Melbourne advised that it would have refused the application on the following grounds:

- 'The height, lack of setbacks, scale, form, bulk and external appearance of the building is contrary to the objectives and built form outcomes of the Design and Development Overlay Schedule 21, the purpose and decision guidelines of the Heritage Overlay, and the relevant policies of Clause 15, Clause 21.06, Clause 21.16-2, Clause 22.05, Clause 22.17 of the Melbourne Planning Scheme and is out of context to the character and scale of the surrounding area.
- The proposal would result in unreasonable overshadowing of Weedon Reserve and is contrary to objectives and policies of Clause 22.02 of the Melbourne Planning Scheme.
- The encroachments of the building into the road reserve would exacerbate the bulk of the building and is contrary to the building projections policy of Clause 22.17 of the Melbourne Planning Scheme.
- The proposal represents an overdevelopment of the site, which prejudices the development potential of adjoining land and would set an undesirable precedence for the area.
- The car parking and access arrangements are

contrary to the purpose and design standards of Clause 52.06 of the Melbourne Planning Scheme.

- The proposed vehicular access and egress to and from the subject site is unsafe and incompatible with the operation of Hoddle Street.

VCAT Decision

The VCAT decision includes discussion regarding height, scale and form in terms of Design and Development Overlay Schedule 21 (DDO21), heritage, vehicle access and impact on adjoining properties.

In terms of the issue of sunlight to public space, the VCAT decision refers to the following relevant built form outcome for Area 20 of DDO21:

- 'Development that does not overshadow Yarra Park between 11am and 2pm on 22 September and 22 March.'

Whilst the VCAT decision ultimately agrees that the application should be refused, it states that there 'is no dispute that the proposal has no shadow impact on either the Fitzroy Gardens or Yarra Park'. However, the VCAT decision does not reference Clause 22.02 or the above ground of refusal that the 'proposal would result in unreasonable overshadowing of Weedon Reserve and is contrary to objectives and policies of Clause 22.02 of the Melbourne Planning Scheme'.

Implications

This finding is relevant for any site where Clause 22.02 applies together with a Design and Development Overlay (other than DDO10) with a built form outcome relating to overshadowing of public space as the VCAT decision refers only to the built form outcome of DDO21. It is unclear as to the reason that the VCAT decision did not reference Clause 22.02 given that at the time it applied to 'public spaces such as parks

and gardens, squares, streets and lanes, and includes privately owned spaces accessible to the public, such as building forecourts, atria and plazas within the municipality excluding the Docklands Zone’.

Case 3 - CBUS Property West Melbourne Pty Ltd v Melbourne CC (19 October 2015)

Background

Planning permit application TP-2014-843 sought the construction of a 14 storey residential apartment building accommodating 200 apartments with café and commercial premises at the ground floor plus basement car park for 112 car spaces at 9 Dryburgh Street, West Melbourne.

A refusal was issued by the City of Melbourne on grounds relating to inappropriate design, internal amenity issues, traffic, car parking and the shadow impact on the North Melbourne Train Station concourse and main entrance. The applicant, CBUS Property West Melbourne Pty Ltd, sought a review of the refusal to grant a permit at VCAT.

TP-2014-843 was lodged after the adoption of the Arden-Macaulay Structure Plan and Amendment C190, which included consideration of sunlight to public space. However, the VCAT decision states that:

‘In Melbourne CC v Minister For Planning [2013, VCAT 1277], Members Deidun and Read concluded that they should give Amendment C190 little weight, given its final form is far from certain and it is unclear if a critical element such as mandatory height limits would make their way into the planning scheme. Whilst we agree with this observation, we do find that the Arden-Macaulay Structure plan is a useful document in that it makes observations and sets a vision for the future development of the area’.

VCAT Decision

The VCAT decision includes discussion regarding planning policy framework including the Arden Macaulay Structure Plan and Amendment C190, built form and sunlight to public space.

In terms of the issue of sunlight to public space, the

VCAT decision refers to Objective 2.3 of the Guidelines for Higher Density Development rather than Clause 22.02. The submitted shadow diagrams indicate that the development will overshadow the North Melbourne Railway Station and Railway Place from 9am through to 1pm on 22 September. In terms of this impact, the VCAT decision states:

‘There will be an increase in shadow to Railway Place, Dryburgh Street and the North Melbourne Railway Station at different times of the day. We note that if there was a hierarchy of public spaces, recreational public open space would sit at the top and is the most important. The overshadowing does not extend to any recreational public open space. Therefore, in the context of this being an area in change and the fact that a building of 5 to 6 storeys would also cast a shadow on these spaces, we find the extent of shadow acceptable in this context.’

It also states that the ‘railway station, whilst a public space, is an itinerant space where people move from one place to another. It is not a space like a park where people will sit and linger’.

Implications

This finding is relevant for the current (Amendment C270) version of Clause 22.02 as it retains a hierarchy of public spaces. In addition, as identified for Case 2, it is unclear as to the reason that the VCAT decision did not reference Clause 22.02 given that at the time it applied to ‘public spaces such as parks and gardens, squares, streets and lanes, and includes privately owned spaces accessible to the public, such as building forecourts, atria and plazas within the municipality excluding the Docklands Zone.’

Case 4 - Australian Hotel Developments Pty Ltd v Melbourne CC (28 May 2013)

Background

Planning permit application TP-2011-377 sought the demolition of the existing building and the construction of a 43 storey building at 33-35 King Street, Melbourne.

The planning permit application was lodged before the commencement of Amendment C262 therefore, the pre-Amendment C262 version of Clause 22.02 was considered in the assessment, which required that development proposals are assessed against standards including:

- ‘Development should not reduce the amenity of public spaces by casting any additional shadows on public parks and gardens, public squares, major pedestrian routes including streets and lanes (including all streets within the retail core of the Capital City Zone), and privately owned plazas accessible to the public between 11:00am and 2:00pm on 22 September.
- Development in the Capital City Zone and Docklands Zone must not cast a shadow across the south bank of the Yarra River between 11.00 am and 2.00 pm on 22 June.
- Development should not cast a shadow across the north bank of the Yarra River between 11.00 am and 2.00 pm on 22 June.’

In addition, the pre-Amendment C262 version of CCZ1 included the following permit requirement:

- ‘To construct a building or construct or carry out works which will cast a shadow across the north bank of the Yarra River between 11.00 am and 2.00 pm on 22 June. A permit may only be granted if the responsible authority considers the overshadowing will not prejudice the amenity of the Yarra River corridor.’

A refusal was issued by the City of Melbourne on the grounds that the proposal would be an overdevelopment, dominate the public realm and would overshadow the Yarra River corridor between 11am and 2pm at the winter solstice. The applicant, Australian Hotel Developments Pty Ltd, sought a review of the refusal to grant a permit at VCAT.

VCAT Decision

The VCAT decision includes discussion regarding design given its prominence in the skyline, equitable development opportunities and height in terms of off-site impacts including sunlight to public space.

The submitted shadow diagrams indicate that the development will create additional overshadowing of Batman Park at 12.15pm and will cross the north river bank from 1.15pm until 1.45pm. The applicant argued that 'the additional shadow on Batman Park would be minimal and would extend into areas already shadowed by trees in Batman Park'. In response, the City of Melbourne submitted that 'Southbank, the Yarra River and its immediate environs are notable public places that are very important to people living, working or visiting in the City'.

In terms of this impact, the VCAT decision states:

'We accept that the additional winter solstice shadow would be limited to an area adjacent to the King Street Bridge for a short period of time. We also accept that this development would provide employment opportunities and additional dwellings within the CAD as sought by policy. However, we are not persuaded that these benefits have to be achieved with additional shadow over these important public spaces. We consider that the public space adjacent to the river is a highly valuable public place and its amenity should be retained.'

Our attention was drawn to a recent approval of a very tall building at No.568 Collins Street. It will overshadow

the river corridor, the riverbank, the river and the south bank, seemingly contrary to those particular planning policies and objectives. We do not know the particular merits and the balancing process that underpins that decision. We are concerned that if more buildings overshadow the river corridor, the combined effect of their shadow is likely to diminish the amenity of the river corridor, contrary to the outcomes sought by the Melbourne Planning Scheme. We think that our support of a building that casts further shadow along the river corridor needs to be based on substantial community benefits that offset the reduced amenity of this important public space. We are not persuaded that the increased height (and additional dwellings) that causes the overshadowing generates such compelling community benefits to justify the diminished amenity along the river corridor.'

We are satisfied that there is considerable and consistent policy within the Scheme to support this view. State and local policy consistently and strongly encourage the retention of the amenity of public spaces including the parks along the river. The local planning policy framework notes that the Yarra River is a key positive feature of central Melbourne, contributing to attractiveness, lifestyle and recreation. With regard to the interface of development on public spaces such as the Yarra River, the LPPF provides that the Yarra River is an important element of the City. New development should be compatible with the scale, character and amenity of parks and open spaces used by the public, including the environs of the Yarra and adjacent precincts.'

[..]

Secondly, we consider that access to sunshine in Melbourne's grey and cold winter months is highly desirable. We think further reducing people's access to direct sunlight in these cooler times would adversely affect the opportunities for people who live, work and

visit the city to enjoy some winter sunlight that provide some relief to this season.

Thirdly, there is very limited green public space in the western end of the CBD. We consider that it is both good urban design and consistent with planning policy that the limited areas of green open space with direct sunlight be preserved, particularly if policy is encouraging more people to live and work in this end of the city.

Fourthly, we concur with the responsible authority that the precise provisions of the planning scheme such as the definition of the river bank need to be read within the context of the broader policies that indicates that more intensive development is to be responsive to, and not adversely impact on the amenity of public spaces.

Finally, we consider that other developments at the southwest of the CAD have constrained their height so they do not impose themselves on the river corridor. Approval of this development would establish a new approach that, over time, could encourage be incremental creep that could eventually diminish the amenity of these public spaces through a cumulative loss of sunlight along the river and its environs.

We consider that this development would adversely impact the banks of the river, contrary to policy. We are persuaded that the height of the building should be reduced so it does not impose additional shadow onto the Yarra River's north corridor. We cannot be precise about the changes required to the building to achieve this outcome, but think they are limited and a somewhat lower building would still deliver the "compact city" outcomes sought by the planning scheme without intruding onto the Yarra River corridor.'

of building or works which will cast a shadow across the north bank of the Yarra River between 11.00 am and 2.00 pm on 22 June. In addition, the Amendment C270 version of Clause 22.02 states that development must not cast additional shadow across a list of key public spaces including the Yarra River corridor (comprising 15 metres from the edge of the north bank of the river to the south bank of the river) at key times and dates identified in the planning scheme. The Amendment C270 version of DD010 states that with the exception of minor works or minor changes to existing buildings within that defined space, a permit must not be granted for buildings and works which would cast any additional shadow across the Yarra River corridor between the hours of 11am to 2pm and 22 April to 22 June.

This finding indicates that VCAT would strictly implement the requirements of the current (Amendment C270) version of Clause 22.02 and DD010. However, the Yarra Corridor is specifically identified whereas some public spaces would fall into the more general third tier or 'Other Public Spaces within the municipality' defined as 'any public space, public parks and gardens, public squares, major pedestrian routes including streets and lanes, open spaces associated with a place of worship and privately owned plazas accessible to the public'.

Implications

Of current relevance, Amendment C270 removed the above-mentioned pre-Amendment C262 version of CCZ1 permit requirement relating to the construction

Appendix D. Australian and international policy approaches

Table 3: Comparative analysis of international and Australian case studies

Jurisdiction	Climate April average temperature June average temperature	Mechanism	Overarching policy	Detailed controls	Method of applying controls
City of Sydney (Inner-city Council)	Humid subtropical April max 23 April min 15 June max 18 June min 10	Prescriptive and performance-based with identification of specific public spaces	Sydney Local Environmental Plan 2012	Division 3, Height of buildings and overshadowing, of Part 6, Local provisions—height and floor space, of the LEP 2012 includes Clause 6.17, Sun access planes	“Solar Access Planes (SAP) - applies to major public ares, e.g. Martin Place, Hyde Park, Pitt Street Mall and No Additional Overshadowing Controls (NAO)” apply to specific places In certain locations, the shadow cast by a defined street wall height is allowed
New York City (Metropolitan-wide)	Humid continental April max 16 April min 7 June max 26 June min 17	Performance-based	New York City's Zoning Resolutions	CEQR Technical Manual (March 2014)	Shadow assessment required for amendments to the Zoning Resolution where the project would either result in new structures of 50 feet or more or are located adjacent to or opposite a 'sunlight-sensitive resource'
City of London, Towers Hamlet (Inner-city Council)	Temperate oceanic April max 16 April min 8 June max 22 June min 14	Performance-based	City of London's Local Plan 2015	Building Research Establishment (BRE) Site layout planning for daylight and sunlight: a guide to good practice (12 September 2011) (BRE's publication)	BRE 's publication provides guidelines to determine the impact of proposed development on daylight and sunlight
Brisbane City Council (Metropolitan-wide)	Subtropical April max 26 April min 17 June max 21 June min 11	Performance-based with consideration for sunlight and shade	Brisbane City Plan 2014	City Centre neighbourhood plan code at Clause 7.2.3.7	Performance outcome P023 requires that development does not 'impinge upon an equal choice of sunlight or shade at lunchtime in winter months' for a list of specific parks/public spaces

Trigger for assessment	Specific parks/public spaces mentioned and protected	Time of application	Degree of certainty	Considers sunlight and shade
Developer assessment of impact on specified parks.	Yes, map included with varied controls noted	Winter Generally between 14 April and 31 August, generally 12pm-4pm but varies with longer times listed for specific places, e.g. Macquarie Place listed from 12pm-2pm	 High, SAP and NAO are both mandatory controls Includes examples of future public spaces where these have been defined, e.g. Future Town Hall Square - 12pm - sunset	No
New structures (or additions to existing) which would result in project 15 metres or higher, or if a site is located adjacent or opposite to a sunlight-sensitive resource	No, all parks defined as 'sunlight-sensitive resources' but the significance of any new incremental shadows is based on the extent and duration of the shadows and the context	Winter Shadow assessment considers shadows occurring between 1.5 hours after sunrise and 1.5 hours before sunset but significance of new incremental shadows considers the context Shadow impact is assessed on representative days across each season	 High, development that is compliant with an approved amendment to the Zoning Resolution is 'as-of-right'	No
Developer assessment of impact on all parks	No, general reference to gardens and open space (private and public)	Spring Equinox For gardens and open space (private and public) , BRE references two hours of sunlight on 21 March which should reach 'at least half' of a park. Loss of sunlight should not diminish existing by more than 0.8 times it's former value	 Low, guidelines not mandatory. Open to interpretation	No
Developer assessment of impact on specified parks	Yes, King George Square, Queen's Gardens, Anzac Square and Post Office Square	Winter Acceptable outcome A023 to achieve P023 references between the hours of noon and 2pm on 21 June	 High, A023 requires that: 'Development does not increase the extent to which sunshine is blocked between noon and 2pm on 21 June from King George Square, Queen's Gardens, Anzac Square and Post Office Square.'	Yes, P023 references an equal choice of sunlight or shade at lunchtime in winter months

 High degree of certainty  Low degree of certainty

Jurisdiction	Climate April average temperature June average temperature	Mechanism	Overarching policy	Detailed controls	Method of applying controls
City of Toronto ((Inner-city Council)	Humid continental April max 11 April min 4 June max 24 June min 15	Performance-based with identification of a hierarchy of public space and some flexibility	City of Toronto's Official Plan (June 2015)	Design Guidelines including the Tall Building Design Guidelines (May 2013), which is supplemented by the Downtown Tall Buildings: Vision and Supplementary Design Guidelines (July 2012) for Downtown areas)	Supplementary Design Guideline at Chapter 3.2 requires the location and design of tall buildings to not cast new net shadows on a list of parks/public spaces for various times of application (and a specific control to best mitigate all new net shadowing for a list of specific sites throughout the entire day for all seasons of the year)
City of Melbourne (Inner-city Council)	Temperate oceanic April max 21 April min 12 June max 15 June min 8	Performance-based according to a defined hierarchy of spaces	Melbourne Planning Scheme	Clause 22.02, Sunlight to Public Spaces, which references the overshadowing requirements at Schedule 10 to the Design and Development Overlay (DDO10). In addition, there are other Schedules to the DDO that reference overshadowing (refer VCAT Case Review - Case 3 regarding DDO21)	Performance-based planning mechanisms that are either mandatory or discretionary depending on the hierarchy (tier 1, 2 or 3) of public space
City of Port Phillip (Inner-city Council)	Temperate oceanic April max 21 April min 12 June max 15 June min 8	Performance-based with identification of specific public spaces	Port Phillip Planning Scheme	Clause 22.06, Urban Design Policy for Non Residential and Multi Unit Residential Development, which references the DDO. There are multiple schedules to the Design and Development Overlay (DDO) that include requirements for buildings and works relating to overshadowing of public spaces such as the Port Phillip Bay foreshore, local parks and footpaths (including DD01, DD05, DD06, DD07, DD08, DD012, DD016 and DD023)	Performance-based planning mechanisms that are either mandatory or discretionary depending on the specific location

Trigger for assessment	Specific parks/public spaces mentioned and protected	Time of application	Degree of certainty	Considers sunlight and shade
Developer assessment of impact on specified parks	Yes, list included with varied controls noted and a general 'All other parks located within and adjacent to the Downtown Tall Buildings: Vision and Supplementary Design Guideline boundary area'	Autumn Equinox Generally 12pm-2pm, but varies with specific times listed for specific places, e.g. 'Signature Parks/Open Spaces' between 10am-4pm on September 21st	 High, Rationale for Supplementary Design Guideline at Chapter 3.2 states that if a proposed tall building casts new net shadow on any park between the hours noted it will have to be redesigned to meet the sunlight protection guideline requirements	No
Developer assessment of impact on specified parks	Yes, list providing for Tier 1 and 2 parks. Tier 3 parks are not specifically mentioned	Winter (Central City) Equinox (elsewhere) Generally middle of the day, but varies with specific times listed for specific places	 -  High to Low, Depending on the hierarchy (tier 1, 2 or 3) of public space (refer VCAT Case Review)	No
	Yes, Schedules to the DDO identify specific locations	Winter Apart from some exceptions, the times of application are generally identified within 10am to 4pm on the winter solstice (21 or 22 June)	 -  High to Low, Depending on whether mandatory or discretionary	Only DD023 references shade with the objective to 'achieve an appropriate balance of sunlight and shade in the public realm'

Case Study 1 – City of Sydney

Background

The Sydney Local Environmental Plan 2012 (LEP 2012) applies to most of the City of Sydney's local area and is supported by the Sydney Development Control Plan 2012 to provide more detailed controls. The LEP 2012 includes reference to the height of buildings and overshadowing at Division 3.

Sunlight to public space provisions

The LEP 2012 includes the following two planning mechanisms to manage sunlight to public spaces by limiting height of buildings within Central Sydney:

- Sun access planes (SAP)
- No additional overshadowing controls (NAO)

The SAP are planar surfaces at the same angle of the sun at specific dates and times to set the maximum building height. The NAO protect existing sunlight (including that which passes between the gaps of existing buildings) to public spaces surrounded by existing development

Division 3, Height of buildings and overshadowing, of Part 6, Local provisions—height and floor space, of the LEP 2012 includes Clause 6.17, Sun access planes, which seeks:

- 'to ensure that buildings maximise sunlight access to the public places set out in this clause, and
- to ensure sunlight access to the facades of sandstone buildings in special character areas to assist the conservation of the sandstone and to maintain the amenity of those areas.'

Clause 6.17 states that the 'consent authority must not grant development consent to development on land if the development will result in any building on the land projecting higher than any part of a sun access plane taken to extend over the land under this clause'.

The subclauses (5)–(19) describes the SAP for major public areas including Belmore Park, Hyde Park North, Hyde Park West, Macquarie Place, Martin Place, Pitt Street Mall, The Domain, Royal Botanic Gardens and Wynyard Park. Clause 6.18, Exceptions to sun access planes, sets out exceptions such as when two sun access planes apply.

In addition, Clause 6.19, Overshadowing of certain public places, states that 'development consent must not be granted to development that results in any part of a building causing additional overshadowing, at any time between 14 April and 31 August in any year, of any of the following locations (as shown with blue hatching on the Sun Access Protection Map) during the times specified in relation to those locations:

- (a) Australia Square Plaza—between 12pm–2pm,
- (b) Chifley Square—between 12pm–2pm,
- (c) First Government House Place—between 12pm–2pm,
- (d) Lang Park—between 12pm–2pm,
- (e) Macquarie Place (beyond the shadow that would be cast by a wall with a 35 metre street frontage height on the eastern alignment of Loftus Street)—between 10am–2pm,
- (f) Martin Place (between Pitt Street and George Street)—between 12pm–2pm,
- (g) Pitt Street Mall (beyond the shadow that would be cast by a wall with a 20 metre street frontage height on the eastern and western alignments of the Mall)—between 10am–2pm,
- (h) Prince Alfred Park (beyond the shadow that would be cast by a wall with a 20 metre frontage height on the boundary between the park and the railway land)—between 12pm–2pm,
- (i) Sydney Town Hall steps—between 10.30am–4pm,
- (j) Sydney Square—between 11am–4pm.

The draft Central City Planning Strategy 2016-2036 released by the City of Sydney on 14 July 2016 includes

amendments to revise and update these two existing planning mechanisms including revisions to SAP and NAO in terms of specified dates and times of protection, addition of controls to protect new and planned public spaces and removal of exceptions to SAP. It states that:

- 'Generally, the times for protection are in the middle of the day when the majority of use occurs and the space is most valued by its users.
- Direct sunlight access to important parks and places is important throughout the year. The dates used to generate these controls are set at the most conservative sun angles, which ensures protection throughout the remainder of the year when the sun is higher in the sky.
- The dates and times of protection vary for each place according to the type of activities occurring in that place that benefits from sunlight, when those activities are likely to occur, and existing levels of sunlight and overshadowing'.

Some examples of specified dates and times that extend beyond the middle of the day:

- Darling Harbour, 11am to 5pm (SAP)
- Future Town Hall Square 12pm to sunset (NAO)
- Observatory Hill, Barangaroo Headland Park, Circular Quay, Walsh Bay Promenade, At all times (NAO)

Implications for the City of Melbourne

Clause 22.02, Sunlight to Public Space, and the overshadowing requirements at Schedule 10 to the

Design and Development Overlay (DDO10) includes only performance-based planning mechanisms that are either mandatory or discretionary depending on the hierarchy (tier 1, 2 or 3) of public space. The prescriptive SAP set out in the LEP 2012 would provide more certainty for protection of sunlight to highly-valued public spaces (such as the first tier of key public space with mandatory controls at Clause 22.02). In addition, unlike Clause 22.02 and DDO10, the proposed amendments to the SAP and NAO under the draft Central City Planning Strategy 2016-2036 include more varied times of protection throughout the day and year to take into account the actual usage patterns of specific public spaces. This is particularly relevant for the third tier of public space in Clause 22.02 and DDO10 which is only protected between 11am and 2pm on 22 September. Finally, also unlike Clause 22.02 and DDO10, the proposed amendments to the SAP and NAO include consideration for planned areas of public space.

Case Study 2 – New York City

Background

The New York City's Zoning Resolution provides city-wide regulations on the use of land and built form including building heights and setbacks. Subject to compliance with the Zoning Resolutions, much of the development in New York City occurs as-of-right. Therefore, sunlight to public space is not assessed on a building-by-building basis but rather when amendments to the Zoning Resolution are proposed.

Sunlight to public space provisions

An amendment to the Zoning Resolution could involve amendments to the zoning text or zoning map to allow development at a specific location or area. Both zoning text and zoning map amendments must be approved by the City Planning Commission (CPC) and adopted by the City Council and both are assessed for environmental impacts in accordance with the State Environmental Quality Act (SEQRA) and City Environmental Quality Review (CEQR).

The CEQR identifies 'any potential adverse environmental effects of proposed actions, assesses their significance, and proposes measures to eliminate or mitigate significant impacts'. The CEQR Technical Manual (March 2014) provides guidance to applicants on the environmental analyses required including shadows. Chapter 8, Shadows, focuses on the 'interaction between proposed new and altered structures and the shadows they may cast on open space, historic and cultural resources, and natural areas'. It states on page 8-1 that:

'Sunlight and shadows affect people and their use of open space all day long and throughout the year, although the effects vary by season. Sunlight can entice outdoor activities, support vegetation, and enhance architectural features, such as stained glass windows and carved detail on historic structures. Conversely,

shadows can affect the growth cycle and sustainability of natural features and the architectural significance of built features.'

A shadow assessment is required if the project would either result in new structures (or additions to existing structures including rooftop equipment) of 50 feet or more or are located adjacent to or opposite a sunlight-sensitive resource. The assessment consists of the following (refer page 8-3):

'The shadow assessment begins with a preliminary screening assessment (Section 310) to ascertain whether a project's shadow may reach any sunlight-sensitive resources at any time of the year. If the screening assessment does not eliminate this possibility, a detailed shadow analysis (Section 320) is required in order to determine the extent and duration of the incremental shadow resulting from the project. The detailed shadow analysis provides the necessary information for the assessment of shadow impacts, which describes the effect of shadows on the sunlight-sensitive resources and their degree of significance. The results of the screening assessment and the detailed shadows analysis should be documented. The effects of shadows on a sunlight-sensitive resource are site-specific; therefore, the screening assessment and subsequent shadow assessment (if required) are performed for each of the sites where a new structure could be built as a result of a project (e.g., for projected and potential development sites).'

In terms of the assessment required, it is noted that the preliminary screening includes three tiers with the third involving a worst case building envelope including the maximum height, all rooftop equipment and any other parts of the building. In terms of the relevant months of the year, the third tier states the following on page 8-9:

'For the New York City area, the months of interest

for an open space resource encompass the growing season (March through October) and one month between November and February (usually December) representing a cold-weather month. Representative days for the growing season are generally the March 21 vernal equinox (or the September 21 autumnal equinox, which is approximately the same), the June 21 summer solstice, and a spring or summer day halfway between the summer solstice and equinoxes such as May 6 or August 6 (which are approximately the same). For the cold weather months, the December 21 winter solstice is usually included to demonstrate conditions during cold-weather when people who do use open spaces rely most heavily on available sunlight for warmth.'

It also identifies that the 'shadow assessment considers those shadows occurring between 1.5 hours after sunrise and 1.5 hours before sunset'.

If the preliminary screening assessment does not eliminate the need for a detailed shadow analysis, it requires an assessment of new incremental shadows on a sunlight-sensitive resource. The significance of the incremental impact is then determined based on the extent and duration of the shadows and the context. For example, for open space or natural resources, it states the following on page 8-24:

'The uses and features of open space or a natural resource indicate its sensitivity to shadows. Shadows occurring during the cold-weather months of interest generally do not affect the growing season of outdoor vegetation; however, their effects on other uses and activities should be assessed. Therefore, this sensitivity is assessed for both (i) warm-weather-dependent features like wading pools and sand boxes, or vegetation that could be affected by a loss of sunlight during the growing season; and (ii) features, such as benches, that could be affected by a loss of winter sunlight.

Uses that rely on sunlight include: passive use, such as sitting or sunning, and active use, such as using

playfields or paved courts, gardening, or playing in children's wading pools and sprinklers. Where lawns are actively used, the turf requires extensive sunlight. Vegetation requiring direct sunlight includes tree canopies, flowering plants, and plots in community gardens. Generally, four to six hours a day of sunlight, particularly in the growing season, is a minimum requirement. Consequently, the assessment of an open space's sensitivity to increased shadows focuses on identifying the existing conditions of its facilities, plantings, and uses, and the sunlight requirements for each.'

The CEQR Technical Manual (page 8-26) also states that the 'shade created by trees and other natural features is not considered to be shadow of concern for the impact analysis; however, incremental shadow on a tree-shaded environment may create a significant impact as the incremental shadow is not redundant with tree shade, and the tree canopy may be considered a sunlight-sensitive resource'.

Implications for the City of Melbourne

Under the Melbourne Planning Scheme, the overshadowing impact of a proposed building is assessed at the planning permit application stage in accordance with Clause 22.02, Sunlight to Public Space, and the overshadowing requirements of DDO10. If mandatory height controls were implemented via a Planning Scheme Amendment, the above comprehensive shadow assessment required under the CEQR Technical Manual for an amendment to the New York City's Zoning Resolution could be implemented.

Case Study 3 – City of London

Background

The City of London's Local Plan (January 2015) sets out the vision, strategy, objectives and policies considered when determining development applications. Policy DM 10.7 Daylight and sunlight seeks:

- 'To resist development which would reduce noticeably the daylight and sunlight available to nearby dwellings and open spaces to unacceptable levels, taking account of the Building Research Establishment's guidelines.
- The design of new developments should allow for the lighting needs of intended occupiers and provide acceptable levels of daylight and sunlight.'

In relation to sunlight to public space, this policy also states:

'3.10.40 The amount of daylight and sunlight received has an important effect on the general amenity of dwellings, the appearance and enjoyment of open spaces and streets, and the energy efficiency of all buildings.'

3.10.41 The Building Research Establishment (BRE) has issued guidelines that set out several methods of assessing changes in daylight and sunlight arising from new developments. The City Corporation will apply these methods, consistent with BRE advice that ideal daylight and sunlight conditions may not be practicable in densely developed city-centre locations. When considering proposed changes to existing lighting levels, the City Corporation will take into account the cumulative effect of development proposals. Where appropriate, the City Corporation will take into account unusual existing circumstances,

such as development on an open or low rise site and the presence of balconies or other external features, which limit the daylight and sunlight that a building can receive.'

The City of London comprises the Square Mile or financial district of London with a concentration of existing and proposed tall buildings. The adjoining borough of Tower Hamlets is currently experiencing significant high-density development and also references the same BRE guidelines in its Local Plan.

Sunlight to public space provisions

The BRE Site layout planning for daylight and sunlight: a guide to good practice (12 September 2011) is used by local authorities including the City of London and Tower Hamlets to determine the impact of proposed development on daylight and sunlight. In terms of gardens and open space (private and public), it recommends the following:

'It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.'

Implications for the City of Melbourne

In contrast with the more general mechanisms of the City of London, Clause 22.02 and the overshadowing requirements at DDO10 identifies a hierarchy of public spaces with a first and second tier of public space with

either mandatory or discretionary controls and a more general third tier or 'Other Public Spaces within the municipality' defined as 'any public space, public parks and gardens, public squares, major pedestrian routes including streets and lanes, open spaces associated with a place of worship and privately owned plazas accessible to the public'. As evident in the following VCAT case review (refer Section 2), this hierarchy can result in reduced protection for the third tier.

Case Study 4 – Brisbane City Council

Background

The Brisbane City Plan 2014 was prepared in accordance with the Sustainable Planning Act 2009 and includes the State Planning Provisions, strategic framework and neighbourhood plans. The City Centre neighbourhood plan code at Clause 7.2.3.7 is one of the specific neighbourhood plans and applies to applications for building work within the centre of Brisbane. It includes:

- The overall outcomes of the City Centre neighbourhood plan code
- Performance outcomes that achieve the overall outcomes of the City Centre neighbourhood plan code
- Acceptable outcomes that achieve the performance outcomes of the City Centre neighbourhood plan code

Sunlight to public space provisions

The overall outcomes for the City Centre neighbourhood plan code includes:

- 'Along the river's edge, development is spaced and landscaped to maximise views and public access to the river, and maximise penetration of light and breezes into the city centre.
- Modern towers each contribute to the city's distinctive skyline and provide elevated outdoor spaces. Towers are sited to maintain the openness of street vistas with adequate spacing between buildings to allow for light penetration, air circulation, views and vistas, and privacy, particularly for residential towers.
- Each development is unique and provides an innovative and contextual design that is tailored to its individual circumstances and is appropriate to its context. While designed to accommodate growth that realises the development potential of

the site and makes efficient use of City Centre land, development:

- protects the amenity of adjoining development, public realm and parks;
- respects heritage, important landmarks and significant views and vistas;
- fits responsively into the streetscape and riverscape;
- positively contributes to the overall city skyline.'

Clause 7.2.3.7.3 sets out the table of performance outcomes and acceptable outcomes, In relation to sunlight to public space, performance outcome P023 requires that:

'Development does not impinge upon an equal choice of sunlight or shade at lunchtime in winter months in King George Square, Queen's Gardens, Anzac Square and Post Office Square.'

The related acceptable outcome A023 requires that:

'Development does not increase the extent to which sunshine is blocked between noon and 2pm on 21 June from King George Square, Queen's Gardens, Anzac Square and Post Office Square.'

Implications for the City of Melbourne

Unlike the above City Centre neighbourhood plan code for Brisbane, Clause 22.02 and the overshadowing requirements at DD010 do not reference the protection of shade, which may become an important consideration for public space given the incidence of skin cancer. In addition, these controls reference 21 June rather than 22 September for the third tier of public space in Clause 22.02 and DD010.

Case Study 5 – City of Toronto

Background

The Toronto Official Plan (June 2015) sets the vision for the growth of Toronto and includes policies to guide development relating to human, built, economic and natural environments. The implementation of the Official Plan is supported by Design Guidelines including the Tall Building Design Guidelines (May 2013), which sets out performance measures for tall building development applications throughout Toronto. In terms of the downtown area, these guidelines are supplemented by the Downtown Tall Buildings: Vision and Supplementary Design Guidelines (July 2012).

Sunlight to public space provisions

The Supplementary Design Guideline at Chapter 3.2 seeks the following:

‘Locate and design tall buildings to not cast new net shadows on:

- a. Parks and open spaces identified as “Signature Parks/Open Spaces” between 10:00 AM and 4:00 PM on September 21st. Signature Parks/Open Spaces include: Allan Gardens; Berczy Park; David Crombie Park; Grange Park; Moss Park; Nathan Phillips Square; St. James Park and Queen’s Park, and
- b. All other parks located within and adjacent to the Downtown Tall Buildings: Vision and Supplementary Design Guideline boundary area, between 12 Noon and 2:00 PM on September 21st.

Locate and design tall buildings to best mitigate all new net shadowing of:

- c. Jesse Ketchum Park, School Playground and Open Space and Ramsden Park in the Bloor-Yorkville/North Midtown Area and St. James Cathedral’s park lawn and spire, throughout the

entire day for all seasons of the year.’.

The rationale for this supplementary design guideline states:

‘If a Sun/Shadow Study, submitted as part of the City’s complete application requirements, shows that a proposed tall building casts new net shadow on any park between the hours noted in the Supplementary Design Guideline #3.2, including parks located adjacent to the Downtown or within the Secondary Plan Areas exclude from the Supplementary Guideline boundary area, the given tower(s) will have to be reduced in height or size and/ or otherwise re-designed and re-oriented to meet the sunlight protection guideline requirements.

Although Supplementary Design Guideline #3.2 provides a minimum sunlight protection guideline requirement for Downtown parks, this should not be interpreted as taking away from the City’s ability to require sunlight protection beyond the minimum 2 to 6 hours of sunlight set by this standard or to add new parks/open spaces into the signature park/open space category. Likewise, it should not be interpreted as taking away from the City’s ability to obtain sunlight protection for other specified periods of time outside of the 10:00 AM to 4:00 PM or noon to 2:00 PM timeframes set by this standard. Finally, it should not be seen as taking away from the ability to obtain sunlight protection for all seasons of the year and not just the shoulder seasons, for particular local parks or open spaces, if there are good planning grounds for doing so, as determined through a site-specific tall building proposal evaluation and approvals process.’

Implications for the City of Melbourne

As noted above for Case Study 1, Clause 22.02 and the overshadowing requirements at DDO10 do not allow for flexibility in terms of varying the times of protection throughout the day and/or year as identified under the rationale for the above supplementary design guideline in the Downtown Tall Buildings: Vision and Performance Standards Design Guidelines for Toronto. This is particularly relevant for the third tier of public space at Clause 22.02 and DDO10 which is only protected between 11am and 2pm on 22 September.

Case Study 6 – City of Port Phillip

Background

The Port Phillip Planning Scheme, like the Melbourne Planning Scheme, contains strategies, policies and provisions that control land use and development including the local policies in the Local Planning Policy Framework (LPPF).

Sunlight to public space provisions

Clause 22.06, Urban Design Policy for Non Residential and Multi Unit Residential Development, of the LPPF includes policy for non-residential and multi-unit residential development (where Clause 55 does not apply) relating to public spaces at Clause 22.06-3. The relevant policy statements are as follows:

- 'Encourage new development to protect and enhance pedestrian spaces, streets, squares, parks, public space and walkways (see Performance Measure 1).

Performance Measure 1

New development may meet the above policy for the public realm if, as appropriate:

- The building does not exceed 3 storeys in height adjacent to a public space, including a footpath (unless otherwise specified in a DDO),
- Elements of the buildings greater than 3 storeys in height are set back behind the 3rd storey level (unless otherwise specified in a DDO).'

- 'Ensure that new development does not overshadow public parkland (land included in the Public Park

and Recreation Zone) between the hours of 10.00am and 4.00pm on the 22 June (winter solstice), unless otherwise specified in a DDO.'

- Further to these policy statements, there are multiple schedules to the Design and Development Overlay (DDO) that specify requirements for buildings and works relating to overshadowing of public spaces such as the Port Phillip Bay foreshore, local parks and footpaths (including DD01, DD05, DD06, DD07, DD08, DD012, DD016 and DD023). Apart from some exceptions, the times of application are generally identified within 10am to 4pm on the winter solstice (21 or 22 June). In addition, the majority of requirements are discretionary. Exceptions include those relating to footpaths in DD08, DD016, DD021 and Port Phillip Bay foreshore in DD06.

Implications for the City of Melbourne

The mechanisms to control sunlight to public spaces in the Port Phillip Planning Scheme are comparable to the Melbourne Planning Scheme. However, Performance Measure 1 of Clause 22.06 identifies a preferred (unless otherwise specified in a DDO) street wall height and setback for non-residential and multi-unit residential development throughout the municipality that is adjacent to a public space including a footpath. In addition, the Port Phillip Planning Scheme has stronger controls in relation to sunlight access to footpaths in DD08, DD016 and DD021. As noted above, Clause 22.02 includes footpaths on the streets and lanes of major pedestrian routes in a general third tier or 'Other Public Spaces within the municipality'.

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