

# SUSTAINABLE BUILDING DESIGN PLANNING SCHEME AMENDMENT C376 BACKGROUND REPORT





# SUSTAINABLE BUILDING DESIGN: PLANNING SCHEME AMENDMENT C376

## BACKGROUND REPORT

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# SECTION ONE: INTRODUCTION





This report has been prepared by Hansen Partnership to provide an explanation of the rationale and process that informed the drafting of the proposed Amendment C376 to the Melbourne Planning Scheme.

The City of Melbourne has a long history of international best practice in relation to the built environment. This amendment represents the first proposed introduction of planning controls aimed at the private realm arising from the declaration of a 'Climate and Biodiversity Emergency' and the associated ambition for zero greenhouse gas emissions across the municipality by 2040. The application of controls to private land is critical in the delivery of Council objectives as the City of Melbourne owns and controls less than one third of the city's land area, with the majority of the municipality in private ownership.

## BACKGROUND

The formulation of Amendment C376 is built on background influences and findings documented in various reports prepared by and for the City of Melbourne. Key aspects of this background are noted below, with summaries of key documents provided on the following pages:

- The City of Melbourne, responding to increasing evidence of the importance of green cover in urban environments established an evidence base and sought to increase green cover across both the public and private realm. While extensive work has been undertaken by Council in the public realm through their *Urban Forest Strategy (City of Melbourne 2016)*, corresponding delivery of green infrastructure in the private realm has not occurred.
- The *Green our City Strategic Action Plan (City of Melbourne)* was prepared in 2017 which identified the need to use the Melbourne Planning Scheme to deliver green infrastructure in the private realm and included reference to Environmentally Sustainable Design (ESD) updates - *"Pursue changes to the planning scheme to require all types of development in the City to play a part in achieving environmentally sustainable design targets, including green roofs and vertical greening"*.
- Building on international best practice, the City of Melbourne developed the Green Factor Tool in conjunction with Hip v Hype and the University of Melbourne (see Page 27 for further details). This tool was intended to provide a flexible and simple mechanism whereby the delivery of green cover as part of private development could be assessed against the aspirations and targets of the City.
- To underpin the delivery of new ESD policy, a review of Clause 22.19 (where much of the City's current ESD policy is found) was undertaken. The findings of that review were consistent with that of other Councils where reviews of current ESD policy had been undertaken. Key among these was the lack of alignment with current policy and the inability to ensure 'on-the-ground' delivery of proposed ESD components.
- In 2019 ARUP was engaged to prepare a report which reviewed the current planning scheme, gaps and evidence base and established a proposed scope and direction for the planning scheme amendment. The report also translated relevant City of Melbourne objectives and strategies to requirements for use in new planning policy and developed potential best practice targets and standard options for use in a planning policy.
- On 16 July 2019 the City of Melbourne declared a Climate and Biodiversity Emergency, endorsing a municipal wide target of zero emissions by 2040. The ambition regarding zero emissions is underpinned by a State level target to reach zero emissions by 2050, with the rationale for the shorter timeframe provided by more recent scientific evidence.
- A response to the declaration was put to Council in February 2020 which articulated the specific actions the Council would undertake in response to their declaration. This included ten priority areas for action which were adopted by Council. One of the identified priority areas adopted by Council was *"Mandate greening and zero emissions buildings through the Planning Scheme"*. Specifically this sought to *"Increase ambition of a planning scheme amendment to achieve environmentally sustainable design and greening outcomes in all developments"*.



# SUSTAINABLE BUILDING DESIGN: PLANNING SCHEME AMENDMENT C376

## BACKGROUND REPORT

### HANSEN REVIEW

Hansen was engaged by the City of Melbourne to provide a review of the Standards which had been drafted as part of the 2019 *Green Our City Strategic Action Plan (GOCSAP (2019) report)* and to prepare planning controls to implement Standards identified as suitable for inclusion in the Melbourne Planning Scheme.

Key objectives which underpinned Hansen's approach to the review included:

- To ensure that the ambition of the amendment was appropriately aligned with Council's declaration of a Climate and Biodiversity Emergency.
- To have regard to the Council resolution to mandate greening and zero emissions buildings through the Planning Scheme.

The *GOCSAP (2019)* report specifically noted that further refinement of the Standards in relation to the structure, detail and wording and measurement tools would be needed to apply best practice in relation to the selected planning mechanism.

Hansen worked in collaboration with Hip v Hype on the review. Hip v Hype reviewing the 'technical' aspects of the proposed standards, and Hansen's role focused on the planning scheme implementation. Hip v Hype were also involved in the development of the Green Factor Tool, allowing for the updates to that tool to be calibrated to planning recommendations. To avoid a conflict of interest, a review of the Green Factor Tool was undertaken solely by Hansen.

Work undertaken comprised the following key steps:

- A thorough review of the *GOCSAP (2019)* report to establish there was a sufficient evidence base underpinning the proposed standards to justify their inclusion in the Melbourne Planning Scheme.
- An extensive program of ongoing engagement with Council officers across ESD, policy and statutory services.
- A review of how ESD elements are currently included in the scheme (beyond Clause 22.19).
- A review of where benchmarks and targets have been used in relation to built form outcomes in other contexts, including review of other State level requirements, the findings of previous Panels and matters addressed in other contexts, such as indoor air quality.
- A review of the planning scheme tools available to implement improved ESD and green infrastructure outcomes, including consideration of how external tools such as the Green Factor Tool could be integrated into the Melbourne Planning Scheme.
- Testing and confirmation of Councils goals with regard to the Standards, in response to the Council resolution to increase the ambition of the Amendment.
- An assessment of the alignment of the Standards with best practice and against relevant considerations, such as the current Green Star updates and anticipated future BESS updates.
- Translation of the Standards as drafted into content appropriate for inclusion in the scheme.
- Drafting and refinement of amendment documentation, in conjunction with the City of Melbourne.

Draft Standards were taken to the External Advisory Group for review and feedback received from that group was considered in further refinement of the Standards. Ongoing liaison with both the State Government and the Council Alliance for Sustainable Built Environment (CASBE) Councils was undertaken by City of Melbourne as part of the development of the amendment.

Recommendations were also made by Hansen regarding the need for further feasibility testing (see Page 16).

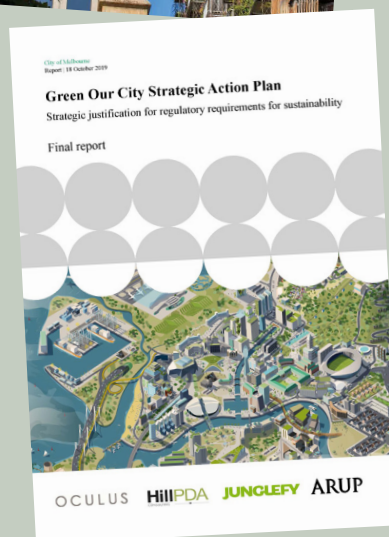
On the basis of the review, recommendations were made regarding a regulatory tool and associated policy wording, Standards and numerical targets as documented in this report. A concurrent assessment of the economic feasibility of the standards was undertaken as recommended.

## Green our City Strategic Action Plan 2017–2021 (City of Melbourne, 2017)

This Plan sought to document the steps needed to ensuring the private sector is an active participant in the delivery of green infrastructure. A significant increased in green cover was identified as being required to help the City mitigate the impact of urbanisation. Green infrastructure was also identified as important to help deliver the City's six sustainability strategies and thus improve resilience. The crux of the issue identified in that report is that despite all the action to date by the City of Melbourne to encourage green infrastructure, uptake of green roofs and vertical greening has been slow and as of November 2017 there were only 38 green rooftops in the municipality.

The Plan sought to ensure a clear direction is set to address identified barriers the private sector faces and the gaps in the current approach so that in the future green infrastructure will become part of the norm.

One of the implementation actions identified in this document was to *"Pursue changes to the planning scheme to require all types of development in the City to play a part in achieving environmentally sustainable design targets, including green roofs and vertical greening"*.



## Green our City Strategic Action Plan (ARUP, 2019)

In implementing the clear strategic direction to mandate for green infrastructure and ESD outcomes in the planning scheme, work was undertaken by Arup, Oculus, HillPDA and Junglefy to establish the strategic justification for regulatory requirements for sustainability. The report detailed the development of a suite of sustainable design and green infrastructure standards which translated sustainability-related goals and targets from City of Melbourne's strategies and plans into potential planning requirements.

This report brought together research from a range of sources and considered which Standards will enable development to meaningfully contribute to objectives, while being technically viable ('can be built') and commercially feasible ('will be built'). The report also considered the broader socio-economic benefits to residents, workers and visitors of implementing the proposed Standards.

These investigations found that while many sustainability themes were well represented in the planning scheme, there were some significant gaps, particularly around green infrastructure. It also found the planning scheme amendment can also take advantage of industry-driven changes such as the requirement for an 'as-built' certification and roadmap towards zero net emissions under Green Star.

The areas recommended for further investigations as part of this report included the green infrastructure, car parking and EV readiness, adaptive reuse, pedestrian connectivity and occupant amenity. Some of these have not been pursued or are addressed in further work. The rationale for pursuing the green infrastructure and EV readiness as part of the current suite of controls is detailed at the relevant section of this report, noting the significant refinement of both the green infrastructure standards proposed in this document and the Green Factor Tool itself since the report was issued.

Investigation identified that the benefits of enhanced sustainability standards are likely to outweigh the costs. Importantly, the proposed standards as drafted were identified as having a broad base of stakeholder support, being technically viable and as having an acceptable impact on commercial feasibility, providing a strong basis for proceeding with the proposed planning scheme amendment.

## Impact review of local policy 22.19 (ARUP, 2019)

Local Policy 22.19 (Energy, Waste and Water efficiency) has been in place since April 2013. This document sought to understand the effectiveness of Clause 22.19 to inform the current amendment. In general, the review found that the targets of Clause 22.19 represents 'business as usual' (or lower) for the commercial sector, but that the residential sector showed low levels of sustainability as a result of the policy. It also found that only the commercial buildings followed through with full certification under the Green Star tool. The review found there is not a great deal of evidence that the current policy has resulted in more sustainable buildings on the ground, particularly in the residential sector, due to there being no requirement for any form of documentation after the planning permit is granted. Concerns identified in the efficiency of the policy related to the non-mandatory certification and to the absence of a requirement to submit 'as-built' evidence at practical completion were reflected in both stakeholder feedback and documentation reviews. There was very little 'as-built' evidence available, which made it difficult to determine whether the statements provided at planning were implemented. The review found that the policy has likely not been a driver for awareness, motivation or capability in the commercial sector which is 'ahead' of the current policy, but has had a small impact in the residential sector. As a result, the impact review recommended consideration of:

- Evidence required to be provided once construction is complete;
- How third party frameworks, such as Green Star, can be used to verify the robustness of the sustainability strategy proposed;
- How to keep the policy's targets relevant as the 'business as usual' benchmarks in the industry increase over time;
- How capability and drivers are different across different sectors;
- Clear mandatory and non-mandatory requirements; and
- How the policy relates to developments at very small scales (e.g. less than 2,000m<sup>2</sup>).



## Climate Change Adaptation Strategy Refresh (City of Melbourne, 2017)

The refresh of the 2009 *Climate Change Adaptation Strategy* provides updated directions for how the City will plan, prepare for and respond to the impacts of climate change. It outlines priorities for adapting to climate change, with reference to complementary strategies such as *Total Water Mark: City as a Catchment* and the *Urban Forest Strategy*. The document details changes to existing programs and new actions to work towards adaptation. Five goals are identified with the most relevant to this amendment being 'Enhance the natural environment and green spaces of our municipality' and 'Shape our built form and urban renewal areas to withstand future climate change impacts'. Among the 'areas to strengthen' identified were responses to flooding and greening of the private realm. Specific actions included "Investigate current obstacles to planning policy use and application for achieving adaptation outcomes" and "...include specific objectives, minimum standards and performance measures for climate change adaptation in the municipality's built environment".

## Transport Strategy 2030 (City of Melbourne, 2020)

The recent *Transport Strategy* identified a number of aspirations which include creating a safe and liveable city, fostering an efficient and productive city and encouraging a dynamic and adaptive city. There are specific targets identified which are to:

- Reduce by half the number of people killed or seriously injured on our streets;
- Reduce by half the proportion of central city through-traffic;
- Increase public transport, walking and cycling mode share to 70 per cent of all trips; and
- Increase proportion of women cycling to 40 per cent.

As part of the Strategy a number of specific opportunities are identified including investigation of opportunities to increase off-street parking for bicycles and motorcycles and a review of off-street parking policies to support better outcomes in all spatial planning in the municipality. The Strategy also seeks to increase the use of car share. Other relevant outcomes include supporting electric car changing in buildings and minimising on-street charging (Outcome 12.4).





## RATIONALE FOR THE AMENDMENT

While the *GOCSAP (2019)* report and other background documents provide more extensive discussions focussed on the rationale for the amendment, the following key observations are made as part of this review:

- The scientific basis for a response to climate change is clear, and the scientific evidence as to the step-change required to respond to this science continues to strengthen. Planning as a discipline must respond to this evidence base.
- Climate change requires an evolution from a 'business as usual' approach. The fundamental importance of addressing climate change and its impacts in meeting the objectives of planning under the *Planning and Environment Act (1987)* are acknowledged. The State commitment to zero emissions by 2050 means an inevitable change in current practice at state, city, precinct and lot scale. To date the change required has not been reflected in planning policy.
- How we plan our cities, and build our buildings is a core part of any response to both mitigation and adaptation imperatives as a result of climate change. Buildings currently account for over 50% of Australia's electricity use and almost a quarter of our carbon emissions. In the City of Melbourne buildings contribute 66 per cent of current annual greenhouse gas emissions. Buildings can make therefore make a significant contribution to mitigation. They also have a clear role to play in adaptation to support community resilience.
- The City of Melbourne owns and controls less than one third of the city's land area, with the majority of the municipality in private ownership. In terms of built form, City of Melbourne owns 1.3 per cent of the buildings in the municipality (279 out of a total of 22,152). The private realm is therefore a critical contributor to any overarching municipal goals or targets. While the City, in partnership with other public entities, can drive change on public land, the planning system remains a key tool in facilitating changed practices on private land.
- The current content of the Melbourne Planning Scheme relating to ESD has begun the process of 'transition' in the introduction of planning controls which require higher levels of environmental sustainability (i.e. comparable, discretionary, controls already apply in the City). The declaration of an 'emergency' by Council constitutes recognition that further opportunities for gradual transition to address climate change have been lost and that urgent action is needed.
- Reviews undertaken prior to the formation of this amendment have identified that current policy in relation to relevant themes has both clear gaps (such as in relation to urban ecology) and shortcomings (such as in relation to energy efficiency and sustainable transport). There are also existing shortcomings in how policy is implemented and the 'follow through' of building elements which contribute to ESD outcomes.
- While the City of Melbourne's ESD policy (Energy Water and Waste Efficiency at Clause 22.19) was the first in the State, it is now outdated in relation to other comparable policies and misaligned with adopted Council positions.

On the basis of the above there is a clear rationale to update policy content relating to sustainable building design in the City of Melbourne to reflect evolution in the understanding of best practice, technological changes and the need for greater certainty in the delivery of buildings which mitigate and respond to climate change.



## SECTION TWO: FINDINGS





The review undertaken by Hansen determined that the fundamentals of the Standards proposed in the *GOCSAP (2019)* report were sound and there was a clear overarching rationale for the benefits in applying more sophisticated ESD controls.

In the refinement of the proposed Standards and the translation of these into policy and controls, the following considerations were acknowledged:

- It is widely accepted that it is of fundamental importance to 'build in' environmentally sustainable design, and particular energy efficiency, in the early stages of planning. Ensuring new buildings are energy efficient (and therefore reduce overall demand) is an important step in supporting broader transition to zero emissions, noting the challenges associated with retrofitting existing building stock.
- Many of the core principles and design outcomes which are necessary to deliver a built environment which responds to the climate emergency fundamentally need to be delivered at the planning stage. If they are not addressed at the planning stage, all too often optimal outcomes are 'locked out' or incur much greater costs. It is much more 'cost effective' to design in required responses than to add them later.

- There will necessarily be a difference in the scale, scope and practicality of delivering different standards having consideration to their application at a National, State or Local level. In other words, the particular characteristics of the City of Melbourne mean that the expectation and ability of developers to deliver outcomes is different from those which may exist in a regional centre (for example). This is supported by previous findings by the 2014 Ministerial Advisory Committee on Environmentally Efficient Design Local Policies which confirmed there was scope for local policies to *"raise the bar' where municipalities wish to exceed the Statewide requirement."*

The review was undertaken with a clear view that the amendment was to be focussed on the private realm within the City, and on the matters which can be influenced at a lot scale. The higher-level strategic planning work that underpins urban consolidation, land use decisions, public transport provision and broader built form parameters does not form part of this amendment. The controls proposed through this amendment therefore are not intended to represent a 'holistic' suite of planning policy responding to climate change but to implement the first step in aligning outcomes across the public and private parts of the municipality.

A critical review of the Standards identified that in some cases, the translation of objectives which had originally applied to public land resulted in issues which meant these were not pursued through translation, including content derived from the *Nature in the City Strategy (City of Melbourne, 2017)*. Aspects of built form considered relevant at a lot level in responding to climate change are discussed in the highlight box on the following page.



## HOW CAN A 'PLANNING' RESPONSE TO CLIMATE CHANGE BE ADDRESSED AT LOT SCALE?

There is an important distinction to be made between what planning is able to achieve at a 'strategic' level (for example at a precinct scale) and what controls intended for application to individual developments can achieve. The opportunities at a precinct level are likely to be greater than at an individual site level but a response to climate change must necessarily consider the opportunities available in all areas, particularly considering the majority of development in the City of Melbourne will be of an incremental nature. The following is a brief summary of the core areas which can be addressed at a lot scale. These fall into two categories:

**Mitigation:** *Areas where the built environment can contribute to a reduction in greenhouse gas emissions*

**Adaptation:** *Areas where the built environment can support resilience in the face of increasing impacts under a changing climate.*

### MITIGATION

#### Energy Efficiency & Renewables

- Thermal performance of buildings (reducing operational carbon)
- Delivery and protection of renewable energy infrastructure
- Embodied carbon reduction / Building re-use and adaptation

#### Sustainable Transport

- Car parking provision to support modal shift to sustainable transport alternatives
- Increased bicycle parking and associated facilities
- Delivery of sustainable transport infrastructure (such as EV charging stations, car share)
- Development interfaces to support key pedestrian routes or public transport infrastructure to facilitate greater uptake

#### Waste and Resource Recovery

- Design of buildings to ensure sufficient space allocated to support sustainable waste processes and diversion of waste from landfill
- Management of construction process to reduce water generated and increase recycling of materials

### ADAPTATION

#### Urban Heat Island Response

- Increased canopy cover / tree retention to regulate microclimates and provide shade
- Use of non-heat absorbing materials / green cover on buildings and as part of landscaping

#### Urban Ecology

- Protection and expansion of biodiversity and habitat through increase provision of layered landscaping and reduction in removal of existing habitat
- Delivery of increased green cover to reduce temperature and provide shade and shelter

#### Integrated Water Management

- Stormwater flow management and measures to protect quality of stormwater
- Water efficiency and the use of recycled water
- Building design responses related to flood management, including sea level rise







## FINDINGS ON APPROACH TO CONTROLS

The *Green Our City Strategic Action Plan* report prepared in 2019 included a series of recommendations in relation to the specific Standards that should be pursued. However, the report also included a series of parameters which relate to the broader application of controls which can be summarised as follows:

- The Standards should be applied to a broad range of typologies which are identified in Figure 1 and represent *“more than 80% of the floorspace developed or refurbished each year”*.
- Standards were developed as ‘minimum’ and ‘preferred’ standards, with the minimum standard to be *“applied across all development types (mandatory)”*.
- The Standards included use of a range of external tools including Green Star, BESS, NatHERS etc. The use of the Green Star tool was identified as particularly important in facilitating the achievement of zero emissions buildings.

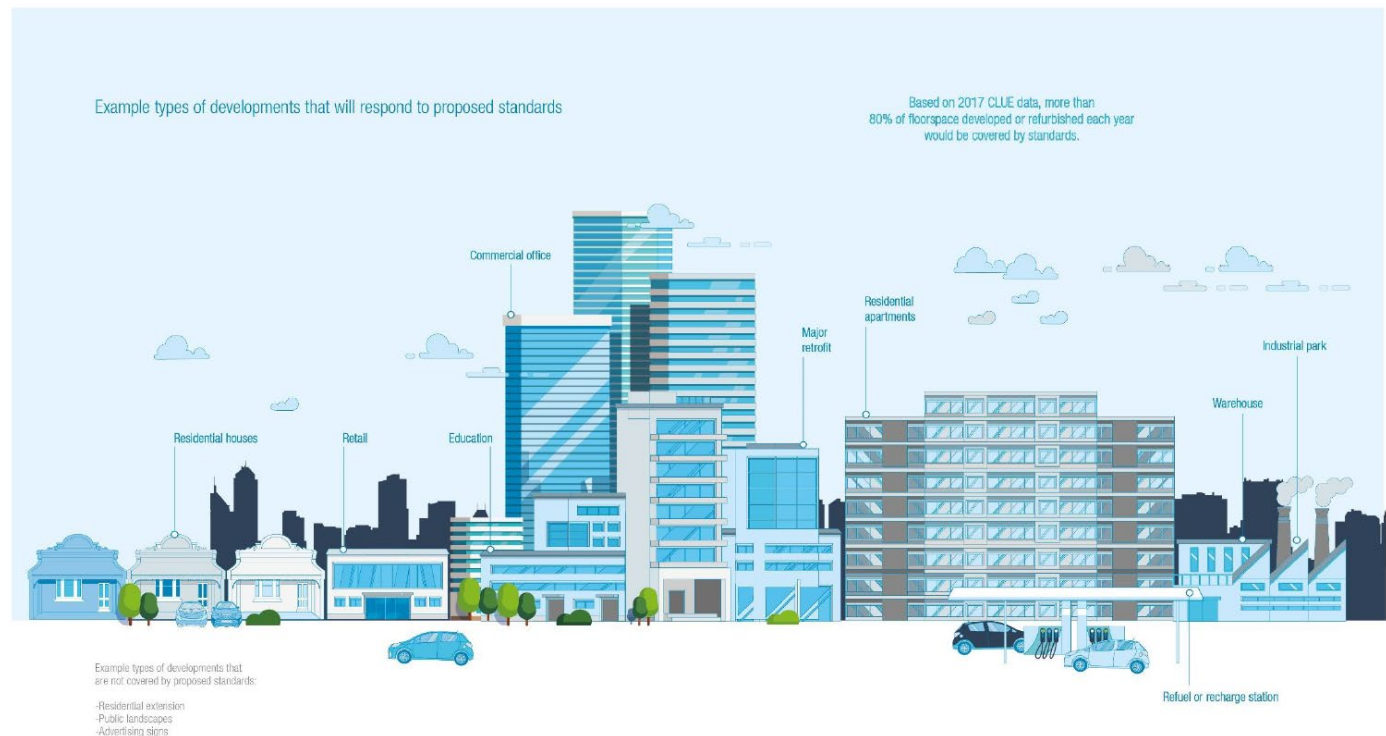


Figure 1: GOCSAP proposed application of standards

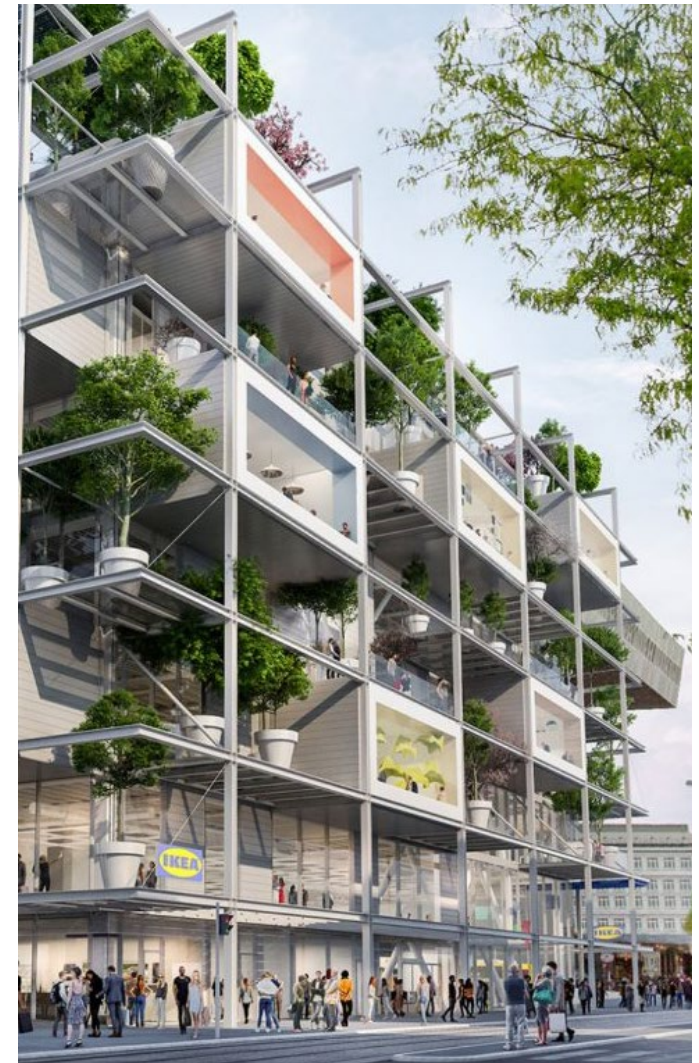
While fundamentally sound, the Standards as drafted required significant review to 'translate' the draft content into wording appropriate for inclusion within the Melbourne Planning Scheme noting the following in particular:

- It was critical that the land use and built form typologies to which the Standards were to apply were confirmed so the appropriateness of the application of these proposed Standards to these could be subsequently confirmed (particularly in relation to 'commercial viability') and the amendment documentation drafted accordingly.
- The intended application of the Standards to alterations and additions was unclear and required clarification.
- The spatial extent of the amendment needed to be confirmed as this would determine the available tools for implementation. A variety of options were considered, including a precinct based approach.
- While the use of external tools was confirmed as appropriate and the provision of certainty of delivery addressed by certifications, the issue of how to apply certification through any planning controls required resolution having regard to the VPPs proposed.
- Consideration was also needed as to the scope of mandatory standards proposed in line with relevant planning practice note. The subsequent significant revision of the application of mandatory controls led to alternate drafting regarding the proposed 'minimum' and 'preferred'. The use of 'minimum' requirements, as distinct from 'mandatory minimums' allowed the translation of some proposed 'preferred' standards to a discretionary minimum.

- The report comprised only Standards and had not contemplated or articulated associated policy content such as objectives and strategies which would be delivered by the introduction of the proposed Standards. This was a gap that was rectified through the review process.

Given the complexities associated with the introduction of both mandatory and municipal wide controls, these two aspects of the recommendations were thoroughly interrogated. In addition to the recommendations of the *GOSCSAP (2019)* it was confirmed that, consistent with the relevant recommendations and resolutions (see Page 5), Council's position on the amendment was that:

- The amendment was to apply municipal wide; and
- At least some of the elements of the controls would be mandatory (to deliver zero emissions and greening).







## What typologies should the standards apply to?

As noted, in undertaking the review of the *GOCSAP (2019)* report, one of the aims was to provide some further clarity around three key questions:

- To which land uses should the standards apply?
- To what spatial extent should the standards apply?
- To what scale of development should the standards apply?

### LAND USES

While the underlying premise of the report, that the Standards should be applied broadly, was accepted, some further evaluation was required. The land uses identified in the *GOCSAP (2019)* report (see Figure 1) differ somewhat from those currently subject to Clause 22.19, Clause 22.23 and relevant Fishermans Bend policy. A comparison is provided at Table 1.

Given most controls do not currently apply to 'Warehouse', 'Industrial Park' and 'Refuel or recharge station' as well as the 'retrofit' (which is discussed further below) consideration as to the appropriateness of the application of the standards was therefore necessary.

It was also noted through the review process that the feasibility testing undertaken did not address the full range of land uses addressed in the table and was focussed primarily on mixed use developments above four storeys. This was on the basis that these comprise the majority of applications within the municipality. Furthermore, only the 'minimum' standards were tested, although the report noted that 'preferred' standards were required to deliver Council objectives.

GOCSAP (2019)	CLAUSE 22.19	CLAUSE 22.23	FISHERMANS BEND (CCZ4)
Residential houses	Accommodation (except for Dependant Person's Unit, Camping & Caravan Park, Corrective Institution, Host Farm)	All land uses	All land uses
Retail	Retail		
Education	Education centre		
Commercial office	Office		
Major retrofit	Does not apply (noting this is not a 'land use' see further discussion regarding scale of development)		
Residential apartments	Accommodation (except for Dependant Person's Unit, Camping & Caravan Park, Corrective Institution, Host Farm)		
Warehouse	Does not apply		
Industrial Park	Does not apply		
Refuel or recharge station	Does not apply		

Table 1: Comparison of suggested land use application to existing controls

In light of the above, and the evolution of the Standards which had occurred through the review process, an additional round of feasibility testing was then commissioned by the City of Melbourne and undertaken by Hill PDA / RLB / Breathe Architecture. A summary of that process is included opposite.

The conclusion of the feasibility testing, was that the application of both the minimum and preferred Standards was feasible for most typologies. However, the development parameters of 'Industrial' and 'Warehouse' uses meant that Standards would need to be modified in order to be appropriately applied to those uses. Similarly, testing of the Green Factor Tool identified that the characteristics of Industrial and Warehouse uses meant that if a Green Factor Score was applied it would need to be lower than that applied to other land uses. As a result Industrial and Warehouse uses were removed from the list of typologies to which the amendment would apply. Alternate Standards may be developed in the future for these land uses, noting they make up a very small proportion of development in the municipality. By extension, the same thinking was applied to the 'Refuel or recharge station'.

It is noted that within the 'Industrial' land use nesting 'Research and Development' uses are likely to have characteristics which are more closely aligned to Offices uses, and the feasibility parameters for this use may therefore differ from the 'parent' land use. This is an important consideration in light of anticipated development in many of the City's key renewal precincts. Including Research and Development in the scope of the controls would have strategic justification provided feasibility testing commensurate with that undertaken for other land uses confirmed development viability.

A review of land uses terms and an extrapolation of parameters provided in the *GOCSAP (2019)* report indicate that the inclusion of 'Place of Assembly' would also be justified.

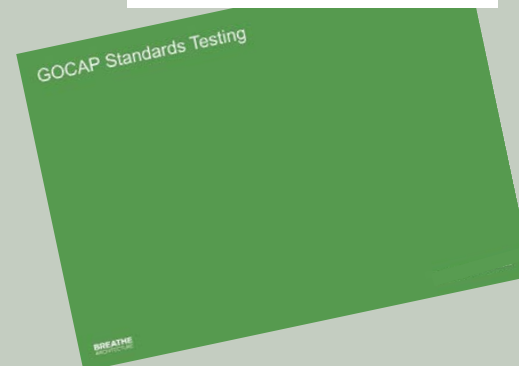
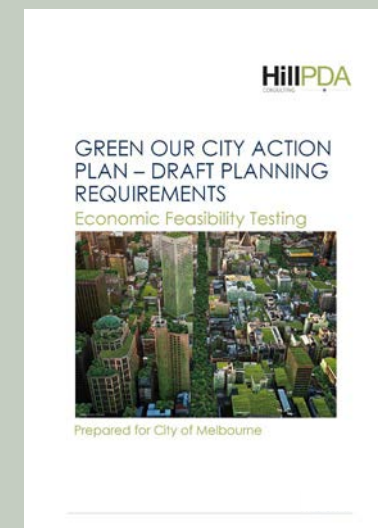
## FEASIBILITY TESTING

*A further eight sites in the City of Melbourne were selected to represent a range of standard developments across multiple typologies. Each site had a real planning application that represented a 'baseline' ESD response. Breathe Architecture reviewed each of these baseline cases against the proposed standards and made assumptions for potential changes to bring the development up to the minimum and preferred standards where applicable. Rider Levett Bucknall (RLB) provided cost data according to Breathe Architecture's minimum and preferred option designs, with HillPDA also sourcing additional cost data for other elements of the development from relevant sources.*

*Development feasibility modelling was undertaken on three development scenarios for each of the test sites. The base case option shows the existing residual land value under the proposed plans while the two other scenarios show the possible impact on the residual land value and internal rate of return as a result of the introduction of the Standards. Two additional feasibility models were prepared to show the required price premium on property sales to off-set impacts associated with the requirements. In all, 40 feasibility models were generated.*

*The analysis found that the required premium for the eight hypothetical test sites ranges from approximately 2- 10%. This was considered achievable for most of the sites based on market research and test site research, which shows that a price premium in the order of 3-8% for residential and 2-7% is for commercial can be achieved by higher quality based developments that include features aligned with the proposed Standards. The industrial test site shows a 9-10% price premium is required to offset the proposed costs which modelling showed may be difficult.*

*It is noted within these documents that cost impacts documented may be on the 'high' side as a result of the assessment taking existing planning applications that have not had an opportunity to 'design in' the standards and potentially reduce the cost of their implementation.*







## SPATIAL EXTENT

While the report does not explicitly state this, it is clear that the Standards are intended to apply across the whole of the municipality. This has important implications for the review of the evidence base, and also the appropriate tools to utilise to implement the Standards.

In resolving the appropriate tools and drafting, consideration was had for the following:

- The VPPs available to implement the Standards in a consistent manner across the municipality were limited.
- For some parts of the municipality, such as those outside the central city, there were no tools available to deliver specific Standards such as increases to bicycle parking.
- The evidence base for some of the Standards had been developed in relation to a specific area of the municipality and consideration was needed as to whether the Standard was then appropriate to apply more broadly.

The implications of a municipal wide approach was also considered in relation to existing defined 'precincts' within the City, most notably Fishermans Bend but also other important precincts for which planning is in process such as Arden, Macaulay and West Melbourne. Fishermans Bend contains many comparable, but not consistent, requirements for ESD (for example a requirement for mandatory 5 Star Green Star certification, urban heat island response requirement and increased bicycle parking rates). These have only recently been introduced to the scheme, apply across multiple municipalities and were subject to an extensive process of review. As a result, serious thought must be given to including this precinct within the scope of the amendment. There are a number of options available to Council:

- The existing Fishermans Bend policy and controls could be removed where there is duplication and the new controls introduced alongside existing controls consistent with the rest of the municipality.
- The obvious gaps can be filled with the remainder of Fishermans Bend policy left as it is drafted.
- Fishermans Bend can be excluded from the amendment, and updates made to the policy at a later date once Amendment C376 has been finalised.

Omitting Fishermans Bend or just 'filling the gaps' is likely to result in the precinct 'lagging' behind. This is inconsistent with the vision for that area to be a *"leading example for environmental sustainability"*. As such, ensuring the precinct has comparable controls to the rest of the municipality is likely to be required. Consideration will, however, need to be given to how policy applied in Port Phillip can be aligned, particularly noting the application of the Green Factor Tool through the proposed controls.

## SCALE OF DEVELOPMENT

The *GOCSAP (2019)* report identified through the Standards the following typologies:

- *New developments >5000sqm*
- *New developments ≤ 5000sqm and Non-residential building alterations > 1000sqm*
- *New developments*

However, there are further references to other types of development within the document (such as 'Major retrofit') and discussion with the City of Melbourne internal stakeholders identified that many large scale 'new' builds are technically assessed as alterations and additions - for example, where an existing heritage building is partially retained at ground level and a tower constructed above. As such, a full review of the proposed scales of development was undertaken. The following were carried forward as part of the amendment (noting minor tweaks to expression):

- New buildings of more than 5000 sqm gross floor area.
- Buildings and works which result in more than 5000 sqm additional gross floor area.
- New buildings equal to or less than 5000 sqm gross floor area.

In order to deliver the outcomes sought by the project it was also identified that there was a potential gap in the 'alterations and additions' where these applied to 'medium' scale development (where the additional gross floor area is in the range of 1000sqm to 5000sqm beyond the identified 'non-residential'). Further investigations revealed an initial intention for this typology to be included as part of the controls however, no testing had been undertaken for this typology or for larger alterations and additions (over 5000sqm).

Given the importance that has been placed on ensuring the feasibility of the outcomes sought by this amendment, further testing was recommended, and is being undertaken. Should such testing establish that the Standards as drafted are suitable for application to alterations and additions, it is noted that the application of controls should be discretionary to reflect the variety of development outcomes and potential complexities in adapting buildings at this development scale. At the larger scale, a mandatory application is more likely to be achievable, but this would need to be carefully tested prior to implementation.

## FINDINGS ON STANDARDS

The Standards proposed for application through Amendment C376 represent a significant refinement of those found within the *GOCSAP (2019)* report. The specific changes and the rationale for those changes can be found at Appendix One.

Some of these changes were made as a result of a comprehensive review to assess the suitability of the Standards as drafted for inclusion in the Melbourne Planning Scheme, with further changes made as part of consultation undertaken as part of this process. Key to these updates were changes to respond to further clarification of internal goals and objectives, changes to Green Star which are ongoing and feedback from the External Advisory Group. The Standards were also aligned with a broader set of objectives and strategies which were drafted for inclusion in relevant parts of the Melbourne Planning Scheme.

The Standards were categorised under a number of different themes:

- Energy and Emissions (now Overarching ESD and Energy Efficiency & Renewables)
- Sustainable Transport
- Waste and Resource Recovery
- Urban Heat Reduction
- Integrated Water Management
- Urban Ecology

The strategic justification and evidence base for the metrics with some Standards was investigated further. While the overarching economic justification for requiring a transition to zero emissions and more climate resilient building stock is clear, localised feasibility also needed to be established (see highlight box on Page 16). This was undertaken once the first stage of the refinement of the Standards had been undertaken in order to ensure the testing was as relevant as possible.

It is important to note that, in addition to recommendations of further work that could support future updates to the Standards, two of the themes were identified as requiring further investigation prior to proceeding to amendment stage. Given the importance of these two themes (Sustainable Transport and Urban Ecology) to Councils goals, further investigations were undertaken in relation to these two themes to establish Standards which could be supported through any amendment to the Melbourne Planning Scheme.

Key findings and changes to the Standards documented in the *GOCSAP (2019)* report are summarised on the following pages, with further discussion regarding Urban Ecology and Sustainable Transport Standards following.





## BACKGROUND REPORT



### Overarching ESD

The adoption of the proposed Green Star requirements was supported. For larger scale developments, the adoption of the Green Star rating achieves a number of key outcomes:

- It delivers zero carbon buildings in a short timeframe to align with City of Melbourne objectives but with a built in 'transition' period to support industry.
- It includes a rigorous and comprehensive framework for the assessment of relevant aspects of ESD which is based on evidence, heavily tested with developers and supported by industry bodies such as the Property Council.
- It provides more flexibility for the adoption and integration of new technologies and practices than integration of specific requirements for aspect of ESD within the current planning system, which is increasingly important as the rate of technological change increases.
- Is consistent with the current mandatory requirements for development of 10 or more dwellings or 5000sqm of non-residential floorspace in Fishermans Bend found in the schedule to the Capital City Zone.

While the BESS standard does not currently provide a pathway to zero emissions, it is still considered an appropriate tool for assessment of the overarching ESD credentials of medium scale development. Future updates to the BESS tool may seek to advance a zero carbon pathway which would bring this Standard into closer alignment with Council's stated target

Consideration was needed as to how the requirement for achievement of an 'as built' certification was expressed through any planning control (see discussion in following chapter).



### Energy Efficiency & Renewables

The *GOCSAP (2019)* report identified that the minimum Standard articulated in that document does not deliver Council objectives (i.e. to reduce emissions to zero). However, given the variety of development typologies and scales likely to be seen as the Standard is applied across the municipality, the report concluded a lower standard may be appropriate as a 'minimum' to ensure that where mandatory controls are provided they meet the test required for introduction (i.e. can be reasonably applied to all development).

The specific ratings identified by the Standards represent reasonable minimum requirements, with specific commentary provided as follows;

- The NABERS benchmarks are technically and commercially feasible improvements on average practice (defined by NABERS as 3 Stars). NABERS is also consistent with previous performance benchmarks in the planning scheme. The NABERS benchmark included in the *GOCSAP (2019)* report was increased by half a star on review to bring it in line with the updates being made to Green Star.
- The NatHERS requirement reflects the trajectory of the National Construction Code 2022, which aims for a 40% improvement in Australia's energy productivity by 2030.
- One of the key criticisms of current requirements which allow for an average rating across a development is that this is resulting in development having a small number of apartments with very poor outcomes. Specifying a minimum as well as an average NatHERS rating addresses this current issue.

- 50% BESS is 'average'. The *GOCSAP (2019)* report proposed adoption of 55% BESS target consistent with the 10% increase from construction code however, this was increased following feedback during consultation that this benchmark was significantly lower than necessary to deliver objectives. It is noted that forthcoming BESS updates are seeking to address this further.

It is important to also note that in relation to energy efficiency, requirements to demonstrate minimum energy efficiency benchmarks have been long established through the Melbourne Planning Scheme as part of Clause 22.19. The current Standard represents a logical evolution of that policy having regard to the increased urgency in delivering energy efficiency in a climate crisis.

The Standards originally mandated the need to provide on-site renewable energy generation. This still remains a key objective. However, through review of the Standards it was established that, in the particular context of the City of Melbourne, there were likely to be many sites where this was not a feasible / reasonable outcome. Particularly in the central city where overshadowing is a major barrier to the inclusion of solar generation. The inclusion of a mandatory energy efficiency Standard and a rating which delivers a pathway to zero emissions for larger development in some ways reduces the need to mandate for on-site generation. The Standard remains a relevant consideration however, and applicants will need to demonstrate why they are not delivering on-site generation where this is feasible. Technology around solar generation (such as integrated glazing systems and movable arrays) means there are likely to be significant opportunities emerging in this space.

It is difficult for Council or the State to achieve ambitions of zero emissions (without significant offsets) while gas remains an energy source. The transition from gas however, remains in its early stages and there are some uses for which a replacement energy source is still problematic. Notable among these to which the Standard may apply are some aspects of research and development and health services and potentially some hospitality uses. However, for the majority of uses the alternative technologies to enable a reasonably achieved transition to 100% electricity (which can then translate to 100% renewable generation) are available. The Standard is to be applied on a discretionary basis this allows for those uses which cannot reasonably transition to be considered by Council.



## Waste & Resource recovery

The *GOCSAP (2019)* report contained a number of Standards related to Waste and Resource Recovery, many of which pointed to specific requirements as to how waste was managed within developments. The Standards drafted were all logical in their delivery of Council objectives and references to the collection of organic waste and appropriate spatial areas for waste storage to prevent dumping are consistent with good practice. However, in relation to their inclusion in the Melbourne Planning Scheme and number of other matters were considered:

- The recent changes at a State level have flagged that there will be significant changes in how waste is managed at a property level (i.e. requirement for additional streams for glass and organics) and therefore it is inappropriate to include recommendations relating to specific waste streams in the scheme where these are in the process of evolution.
- The proposed Standard requirement that development prepare a WMP potentially renders some of the other proposed Standards superfluous as these matters are addressed in more detail by the guidelines. Importantly, including other specific requirements relating to waste management in the scheme may create complexities in the application of policy if and when the referenced guidelines are updated or where content may be contradictory.





More broadly however, the Standard referencing the requirement for Waste Management Plan is consistent with current practice as this is a requirement of the existing Clause 22.19. It is more appropriate however, to identify the 'outcome' sought in the drafting of the Standard, with the specific requirement for the documentation (as a WMP) addressed as an application requirement.

While there are not currently any precinct wide waste management plans, their preparation is being contemplated as a way of potentially managing waste more efficiently in the coming years. It is therefore appropriate to build in a requirement that ensures that any precinct based approach is considered as part of the assessment of applications.

Construction waste is a key sector of waste associated with the development industry and introducing a Standard to support the minimisation of waste associated with building materials is aligned with these broader objectives. It has the potential to support further work that should be undertaken around adaptation and reuse of buildings as part of the reduction in emissions associated with embodied energy. The Standard provides policy guidance, particularly in cases where Construction Management Plans are required as a condition on permits.



### Urban Heat Island Response

The GOCSAP (2019) report identified a Standard that replicated that applied to development in Fishermans Bend, which is considered an appropriate precedent. Review of this Standard indicated that it was consistent with good planning practice. The mandatory nature of the controls is also supported due to the inherent flexibility provided by the wording of the Standard. The means by which any development delivers the Standard are likely to vary significantly depending on the site context and development typology, but this is appropriate provided the outcomes are delivered.

The numerical value of the Standard was increased from 70% to 75% which brought the Standard in line with the applicable Green Star credit (noting the development of a new UHI standard as part of the Green Star review remains unresolved at the time of writing). It is understood the intention behind existing policy was that this higher figure was implemented.

The GOCSAP (2019) report also included a Standard to ensure that this overall figure was targeted at areas where reflectance was of most benefit – namely facades exposed to the summer sun (noting this Standard is not mandatory). Two additional Standards were added to support the delivery of an UHI response, reflecting the role that paved areas (particularly where these are permeable) and mechanical heating / cooling infrastructure plays.



### Integrated Water Management

The first Standard proposed under this theme broadly replaces the policy currently addressed at Clause 22.23. A significant proportion of that content has been duplicated by the recent (2019) introduction of Clause 53.18 – Stormwater management in urban development.

The Standards outlined in the *GOCSAP (2019)* report were originally split into three sub-categories to aid with the clarity of the controls. Broadly speaking:

- The first related to stormwater management (currently addressed by Clause 22.23);
- The second, water efficiency (currently addressed by Clause 22.19); and
- The third, flood management - which was drawn from Fishermans Bend controls.

Concurrent to this amendment, the City of Melbourne has recently completed an update of flood modelling. It is anticipated that a future planning scheme amendment will be progressed to update the inundation overlays in the planning scheme. The Ministerial Direction Form and Content of Planning Schemes requires the LSI0 and SBO schedules to state objectives to be achieved, statement of risk, permit requirements, application requirements and decision guidelines. As the content relating to flood management had the potential to overlap with this project, it was determined that it is better aligned with the inundation overlays project and therefore has been removed.



# SUSTAINABLE BUILDING DESIGN: PLANNING SCHEME AMENDMENT C376

## BACKGROUND REPORT

There was considerable refinement of the Standards contained in the original report, which can be summarised as follows:

- It was not considered necessary or appropriate to document the content of the current BEPM guidelines, particularly as these are in the process of being updated. It was considered that the proposed 'preferred' Standard was also potentially problematic in its application in light of the existing misalignment with the BEPM figures, and the potential for this misalignment and inconsistency to be exacerbated when those figures are updated. The inclusion of a mandatory minimum of the 'best practice' was considered sufficient to deliver the objectives.
- Importantly, the Standard requiring mandatory connections to precinct scale infrastructure (which reflects current policy) was retained. The delivery of precinct infrastructure such as recycled water requires a critical mass of developments access this infrastructure. As a result, ensuring commitments to connections are 'built in' at planning stage is important in ensuring these more efficient 'precinct scale' services are delivered where they are deemed to be warranted by the relevant authorities.
- The Water Efficiency Standard considers both access to alternate water sources and overall efficiency (which could be achieved in a variety of ways). While use of alternate sources for all non-potable uses is preferred, in some scenarios this will not be achievable and so the application of this Standard as discretionary is more appropriate. However, a baseline delivery is established that seeks to ensure that at a minimum 10% of on-site uses, or water required for green cover is not drawn from existing potable water supply is consistent with current expectations and identified in the *GOCSAP (2019)* report as reflecting technical feasibility in inner Melbourne built environments.
- The Standards also address water efficiency in the refinement of existing Clause 22.19 requirements to reflect current assessment tools. The original Standard was also updated to reflect the need for broader application across residential development (noting that benchmark in the proposed Standard would only have applied to communal areas of residential development).







## Sustainable Transport

The *GOCSAP (2019)* report provided few details related to Sustainable Transport, suggesting further investigations were required. The single Standard that was proposed sought to increase the requirements for bicycle parking within the City of Melbourne. Through the review process a number of issues were identified including:

- A need to further refine the proposed bicycle parking Standard; and
- Opportunities for the further expansion of the sustainable transport Standards considering the existing evidence base available.

While the recently adopted *Transport Strategy (CoM, 2020)* provides clear and meaningful actions to deliver Council's ambitions related to sustainable transport aligned with emission targets, it does not provide specific detail of the implications relevant to private development.

The delivery of sustainable transport outcomes is highlighted as a critical part of climate change mitigation in Council's *Climate Change Mitigation Strategy (CoM, 2017)*. 'Zero emissions transport' is Priority 3, with an emphasis on boosting public transport and active transport to reduce private vehicle usage in the municipality and on supporting the transition to electric vehicles.

On review of current policy and relevant standards (such as Clause 52.34), it is self-evident that there needs to be notable change to the Melbourne Planning Scheme to align with adopted Council position.

To address this misalignment a review of other existing evidence and policy was undertaken to identify key changes key changes to planning scheme content related to sustainable transport could be pursued. IN addition to the matters discussed below a number of further recommendations were also made to Council to address these gaps (noting some of these were also identified in the *GOCSAP (2019)* report)

It is important to also note commentary below regarding constraints to the application of some controls related to sustainable transport as these are an important consideration.



## BICYCLE PARKING RATES AND ASSOCIATED REQUIREMENTS

There has been considerable work undertaken by the City of Melbourne in relation to the bicycle parking. In particular through two reports prepared by Phillip Boyle and Associates which include a comprehensive review and associated recommendations around bicycle parking undertaken in 2016, which was followed by further work during the background stages of the *Transport Strategy (CoM, 2020)*.

In pursuing increased bicycle parking provisions, the following issues are noted and informed the changes to the *GOCSAP (2019)* report Standards:

- Further consideration of the appropriate expression of the Standards was required. The use of Green Star phrasing in the report (i.e. % of regular occupants) is problematic when considered at a planning assessment phase of development. It is also applied to smaller scale development to which Green Star requirements are not proposed to apply.
- There was also a need to further review the rates given they do not reflect the nuances of the findings of the comprehensive review of bicycle parking undertake by the City of Melbourne in 2016 and further expanded on as part of background research for the recent *Transport Strategy (CoM, 2020)*;
- Further refinement was also required to ensure land use terminology consistent with the Planning Scheme (i.e. 'commercial' is not a defined land use); and

- Investigations of associated facilities such as showers or lockers which would be needed to align with increased bicycle parking rates.

The higher bicycle parking rates proposed for introduction through Amendment C376 are drawn largely from the Philip Boyle report in terms of bicycle parking numbers, somewhat simplified. Requirements for facilities are based around existing requirements at Clause 52.34 but supplemented to reflect the findings of the Boyle report as relate to additional facilities required to support increases in cycle modal share.

In addition, rates for motorcycle parking and car share spaces are proposed to be introduced to the scheme through this amendment. Requirements for car share and motorcycle rates have been previously implemented in Fishermans Bend. Rates proposed through this amendment are broadly aligned with those rates given the comparable context, but modified to reflect the broader range of development typologies to which they would apply.

## ADAPTATION OF CAR PARKING FACILITIES

Requirements relating to the future adaptation of car parking spaces are present in both existing and proposed policy. It is accepted that there are two key matters which influence the ability of car parking areas to transition over time. These relate firstly to the built form (i.e. floor to ceiling heights), and secondly, to the ownership of car parking spaces (and associated subdivision provisions).

The allocation of car parking spaces to individuals rather than a single body such as body corporate creates significant difficulties in any future transition of use. As a

result, an alternate approach which seeks to 'decouple' car parking spaces through changes to subdivision controls is needed. This has been tested and applied in Fishermans Bend where car parking areas must be retained in a single or a consolidated title as common property, unless the responsible authority agrees otherwise. A comparable provision recently progressed through the West Melbourne panel hearing uncontested.

Built form controls (for example, specifying floor to ceiling heights) are currently in, or proposed, in precincts such as Fishermans Bend and West Melbourne and are proposed to be implemented more broadly across the Central City and Southbank through the Central Melbourne Design project (Amendment C308). Some additional changes may be required to ensure that consistent requirements are also implemented in Docklands.

## ELECTRIC VEHICLES

The introduction of Standards relating to electric vehicles is without precedent in Victoria. All approaches to the delivery of zero emissions acknowledge the critical importance of the transitions of the vehicle fleet to electric, despite the currently low rates of take up of this technology. Research by the Australian Energy Market Operator (AEMO) indicates that within 20 years approximately half of all cars will be electric vehicles.

While some charging of vehicles may occur in the equivalent of today's petrol stations, access to charging facilities at a building scale is also important. Future opportunities to create circular energy systems build on potential Vehicle to

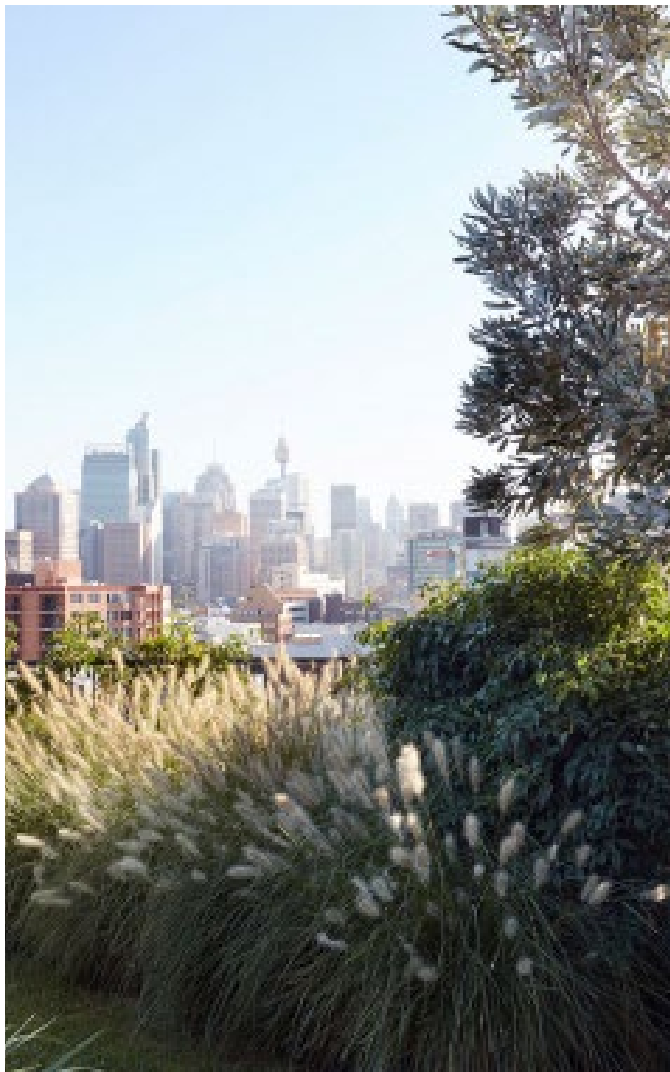
Grid (V2G) and Vehicle to Building (V2B) power supplies. While these opportunities are still emerging and the parameters around them remain theoretical, there is nonetheless a growing market for electric vehicles, the support of which is explicit in adopted Council policy.

One of the current barriers to electric vehicle ownership is access to a reliable charging source, particularly in advance of the roll out of more substantial network of public charging stations. The ability of access charging for an electric vehicle at a building scale is therefore important in supporting the transition to electric vehicles.

Another important consideration in looking at a Standard related to the provision of EV infrastructure are the issues which arise if the delivery of this infrastructure is not considered in the early stages of development planning. There are challenges and high costs associated with retrofitting a building to provide electric vehicle charging infrastructure, however it is relatively simple and low cost to provide the underlying infrastructure at the time of construction to facilitate future installation. Ensuring buildings constructed today are, at least to a degree, ready for the inevitable shifts in vehicle usage is important. The upper level requirement (20%) proposed does not require that spaces are all provided with charging points – merely that the building has been designed so that this is possible to deliver in a cost effective manner in the future.

The rates proposed (5%, with capacity for another 15%) are acknowledged as being much lower than will be needed to deliver Council objectives. However, it is noted that:

- While increased rates may be justified for some development typologies (such as residential), further work is needed to specify higher rates and to test these with the market. 20% may be the upper limit for non-residential development and is consistent with international practice.
- The lower rates are appropriate while an understanding of the implications and opportunities associated with load management are tested through new applications.
- There current 'best practice' for infrastructure provision needed to support EV readiness (for example capacity of distribution boards). However, it is not considered appropriate to specify this in the planning scheme as the roll out of any new technology and associated planning requirement must be necessarily flexible.
- Further work is needed to understand the implications and best approach to the roll out of electric vehicle requirements for smaller scale development such as single dwellings, townhouses etc. Given the spatial application of the current controls (essentially the central city), not applying these controls to smaller scale development will have limited impact.



## Urban Ecology

The delivery of increased green cover within the City of Melbourne, and in particular the delivery of green cover as part of higher density development, is one of the key drivers of this amendment. As discussed, the project has evolved out of the substantial body of work undertaken by the Council as part of the Green our City program, and the recommendation to update the planning scheme to implement a requirement for increased green cover in the *Green our City Strategic Action Plan* (City of Melbourne, 2017). The importance of this was reinforced by the subsequent Council resolution to “*mandate greening [...] through the planning scheme*” associated with Councils declaration of a climate and biodiversity emergency.

The introduction of a ‘green cover’ standard for the majority of developments within the City of Melbourne is one of the key components of this amendment. This will be the first time a minimum requirement for ‘green cover’ is introduced into the Victorian planning system. To date, the delivery of green cover through the VPPs has been undertaken in a fairly ad-hoc manner with different Councils adopting various approaches, many of which have focussed heavily on the delivery of canopy trees. These have been implemented through zone schedules, Design and Development Overlays, Vegetation Protection Overlays, Significant Landscape Overlays as well as requirements imposed at a State level through Clause 55 and more recent changes contemplated to Clause 58.



The *GOCSAP (2019)* report contained an extensive list of proposed Standards under the Urban Ecology theme, many of which were not suitable for inclusion in a planning scheme in their current form. This was acknowledged by the report which suggested further investigation of some of these Standards would be required, as well as further testing of the Green Factor Tool. It is on that basis that the Standard proposed through this amendment is significantly simplified and relates primarily to the delivery of green cover through use the Green Factor Tool. The Green Factor Tool has been subject to the further testing and calibration, as recommended.

While most Standards have been established through an evolution of existing policy or through benchmarking to other policy, the precedent for the inclusion of requirements for green cover at the scale contemplated by this amendment are limited. There are a number of significant challenges that many Councils, and indeed the State, are grappling with in the integration of policy to support increased greening. While there is a general acknowledgment and acceptance of the critical importance of integrating green cover, the mechanisms through which it is delivered via the planning system are more complex. These complexities are perhaps exacerbated in the City of Melbourne as a result of its highly urbanised character, meaning specific requirements for provision of canopy trees (for example) are likely to encounter issues if applied in a mandatory manner as contemplated by the Council resolution.

The response to this issue was to review international best practice and the development of the City of Melbourne's Green Factor Tool. The development of this tool is detailed on Page 27 but the critical aspect of that tool are noted as follows:

- The tool was developed in conjunction with the University of Melbourne and founded on a robust evidence base.
- The underlying 'background' of the tool was subject to a highly rigorous process of review.
- The outcomes and weighting built into the tool are highly specific and are directly aligned with the objectives and outcomes sought by the City of Melbourne, including existing objectives included in the planning scheme.
- The usability of the tool was tested through a voluntary stage and with numerous industry stakeholders to ensure that any issues with the functionality of practical application of the tool are resolved prior to its formal integration into the planning scheme.

From a planning perspective the critically important part of the Green Factor Tool, and its elegance as a solution to existing issues, is that it allows for the identification of a particular benchmark to which the City determines to hold all development, but provides infinite flexibility in how each development gets to that point. This is particularly important noting the diversity of development typologies and spatial contexts to which the Standard is proposed to apply.

The specific Green Factor score referenced in the Standard has evolved from international benchmarking which suggests 50+% horizontal vegetation cover, and the equivalent benchmark embedded in the Green Star Communities tool. New benchmarks are often arbitrary, but need to be robustly tested in that case. The standard originally identified a requirement for 40% horizontal green cover or equivalent. Through testing and refinement of how the Standard would be expressed and assessed through the planning scheme, it was determined that including the relevant Green Factor Score which Council would accept was a clearer way of allowing applicants to understand if they had or hadn't met the required benchmark.

Many of the Standards originally proposed in the *GOCSAP (2019)* report are in fact delivered through the Green Factor Tool and its weighting of different types of green cover, which essentially provides a 'carrot' for the provision of green cover which is of most benefit to the City as a whole. The matters which are more heavily weighted are documented through the second Standard which articulates what green cover should deliver, providing a transparency to applicants as to the 'background' of the Green Factor Tool. The issue of retention of existing canopy trees which underpinned many of the Standards proposed by the *GOCSAP (2019)* report has been recommended for further consideration.

## THE GREEN FACTOR TOOL

As noted, one of the key challenges in the delivery of green cover has been the tension between the need to specify outcomes within a static planning scheme and the need for site specific responses. To date, we continue to see significant loss of both green cover and canopy trees across metropolitan Melbourne. In the City of Melbourne, the highly urban nature of the context and diverse range of development typologies which are present in the city further complicate the delivery of effective policy.

The ability to identify the level or benchmark for the provision of green cover (the 'what') while ensuring that applicants have the flexibility to tailor the means by which they meet this benchmark (the 'how') having regard to their particular site, development typology, target market and aspirations represents an ideal situation. Research undertaken by the City has confirmed that this is possible through the introduction of what is generally referred to as a 'green factor tool'. The City of Melbourne's Green Factor Tool, which sits external to the planning scheme, is designed to allow for an infinite variety of development possibilities to be imputed into a computer model, which then utilises an evidence based weighting system to generate a Green Factor Score. This allows the planning scheme to identify the 'score' required to deliver Council's objectives without mandating a fixed outcome which may not be achievable in some circumstances.

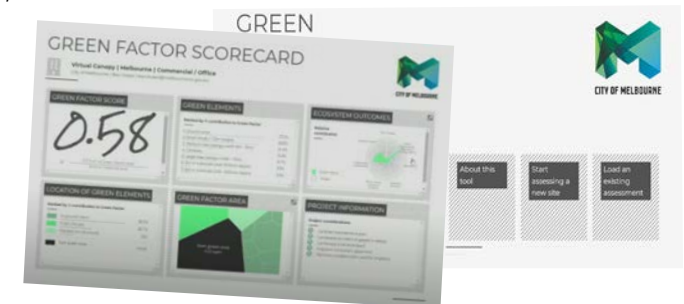
Cities including Berlin, Chicago, London, New York, Malmo, Seattle, Singapore, Tokyo and Toronto have all created greener cities by introducing planning requirements based around a 'green factor'. The Green Factor Tool developed by the City of Melbourne is based on a thorough understanding of international best practice and precedents, and in many ways represents an improvement to these existing models, establishing a new global benchmark for the delivery of green infrastructure in an urban context.

The tool was developed through a number of steps:

- Step 1: Identifying relevant forms and functions. This included identification of urban green space forms based on vegetation strata typologies and functions, and on urban ecosystem services. These were reviewed to identify those relevant to and deliverable at the lot scale within the private realm. Services that require larger scale greenery to provide the function (such as carbon sequestration and noise attenuation) were not included.
- Step 2: Functions were then prioritised through workshoping, with reference to Council's strategic objectives and local context and conditions.
- Step 3: Involved identifying relevant research that demonstrates delivery of function. This included prioritising locally relevant research, with a hierarchy of Melbourne, south-east Australia, southern Australia, Australia, and temperate urban contexts globally.
- Step 4: Weighting of the relative contribution of different forms to delivery of functions and a review / testing of weightings and evidence matrix. Through this process, changes were made (for example, deletion of the air purification function).

The tool is structured around a simple website format, into which the key site particulars, development and the green infrastructure elements are inputted. Green infrastructure elements (e.g. groundcover) are specified by sqm and by type (e.g. indigenous native, exotic, productive which all have different impacts on ecosystem services such as habitat for biodiversity). Every unique green infrastructure element requires a 'weight', which is applied to the specified volume of that element (e.g. its physical 'area') to determine a site's Green Factor Score. Each element has a 'final' weight, which is itself composed of 'sub-weights', which are known as 'function weights'. What these functions represent are determined by the Tool administrator in designing and configuring the tool. As noted, for the Melbourne tool, these functions represent the ecosystem services that have been chosen by the City of Melbourne. The Green Factor Tool allows for weightings to be modified to reflect priorities in different precincts (for example habitat enhancement, reduction in flooding impacts).

The output of the website is a 'Scorecard' which identifies a 'Green factor score', as well as green elements (ranked by % contribution to Green Factor), ecosystem outcomes (relative contribution) as well as other elements.







# SUSTAINABLE BUILDING DESIGN: PLANNING SCHEME AMENDMENT C376

## BACKGROUND REPORT

### OMISSIONS

A number of the opportunities identified in the highlight box on Page 12 are not directly addressed through this amendment and a number of further recommendations have been made by Hansen in relation to additional work which is required to pursue articulated Council objectives.

Of particular note are controls around embodied energy. Embodied energy is a very significant issue and will be critical to address once the relatively 'low hanging' fruit of energy efficiency and other matters included in this amendment have been addressed. Embodied energy represents a significant proportion of emissions associated with the built environment.

It is also noted that there are a number of other ESD 'themes' which are addressed through policies of the CASBE Councils (the Council Alliance for Sustainable Built Environment, which is supported by the Municipal Association of Victoria) Councils and which may also be addressed through Plan Melbourne Action 80 (*Review of planning and building systems to support environmentally sustainable development outcomes*). CASBE has led the introduction of ESD policies into the planning schemes of a number of municipalities. Many of these existing ESD policies also address Indoor Environmental quality and matters such as Noise and Air Pollution. While these are important environmental (in the broadest sense), health and amenity issues they do not have a direct relationship to climate change and biodiversity responses and are not addressed by this amendment. Similarly, other aspects, such as the protection of solar panels, or protection of remnant native vegetation are not addressed having due regard to State level policy being considered sufficient.







# SECTION THREE: TRANSLATION



### WHAT VICTORIA PLANNING PROVISIONS SHOULD BE USED?

Following confirmation of the parameters of the content intended to be applied through the Melbourne Planning Scheme, the review explored the various options for implementation.

In essence, due to the combined factors of mandatory controls and the extent of application being both spatially and typologically diverse, the available options were limited to one tool – the Design and Development Overlay. The factors impacting this tool and the details of how it is proposed to be applied are detailed below. The amendment package comprises the following elements:

- Changes to Local Policy in the form of new objectives and strategies under the varying themes.
- The inclusion of Standards, some of which are mandatory, to support delivery of policy. These are primarily delivered through a Design and Development Overlay (DDO73), other than Sustainable Transport which is delivered through relevant zone schedules (Capital City Zone and Docklands Zone).

The approach to the amendment, and the choices regarding the appropriate tools, as well as drafting of the content, was largely driven by the principle of identifying the 'best fit' from the current suite of provisions, but also sought:

- To **clearly define the City of Melbourne's goals** in relation to response to climate change, both in mitigation and adaptation as it is applicable to individual sites in the private realm.
- To **articulate clear benchmarks** associated with those goals, with the most critical of these being applied on a mandatory basis.
- To **provide flexibility** in how individual developments respond to the required benchmarks.
- To **recognise the different categories of development** (for example - new builds vs alteration and additions, large scale proposals vs medium scale) and to ensure that both the controls and the tools proposed to deliver them were responsive to these differences.

### Policy objectives and strategies

Each Standard proposed for introduction has a direct correlation to a series of objectives which are included at Appendix Two. It is important to note that many of these objectives build upon State level planning objectives which are also documented. Where there are existing State objectives it is not proposed to introduce new Local objectives as the State objectives provide sufficient justification for the introduction of the proposed Standards at a local level. Where necessary, 'local' level strategies have been clarified to provide a link between State objectives and the 'local' standard.

Key changes on content of the Planning Policy Framework in the Melbourne Planning Scheme is noted as follows:

- Adjustments to the Municipal Profile to recognise Councils declaration of a climate emergency and target of zero emissions by 2040. In addition, new content identifying the matters Council will consider in planning for climate change has been included.
- Clause 21.05 is expanded to address the gap left by the removal of Clause 22.23 in relation to alterations and additions between 50sqm and to introduce new objectives and strategies.
- New content at Clause 21.06 Built Environment and Heritage including additional objectives related to Councils target of zero emissions by 2040 and the contribution building design makes to community resilience. Objectives and strategies are structured around lot scale building design and precinct scale outcomes.



- Removal of the existing 'sustainable design' and the integration of new content into a new Built environment – building design at Clause 21.06. This content recognises the role of building design in responding the climate emergency and identifies the strategies Council will pursue in promoting building design that supports mitigation and adaptation to climate change.
- A series of new 'Building design strategies' are included, and the list of Policy documents is updated.
- Adjustments to 'Transport' at Clause 21.09 to acknowledge the role that sustainable transport plays in emissions reduction and Councils support for electric vehicles, as well as the addition of new content explicitly recognising the areas where the private realm can contribute to sustainable outcomes in relation to transport.
- Clauses 22.19 and 22.23 are removed.
- Clause 22.27 is adjusted to remove elements addressed by the amendment where there are notable differences to avoid inconsistencies.

It is noted that initial feedback has indicated there may be some adjustment of the relevant State level themes to emerge as part of Action 80 (see highlight box). However, these changes are unconfirmed at the time of writing.

Corresponding policy compatible with the new format planning schemes has been drafted to be utilised when the relevant Smart Planning amendment proceeds.

## CONCURRENT PROJECTS

It is important to also acknowledge that there are a number of concurrent planning reforms and projects which are ongoing have a relationship with the current amendment. To the greatest degree practical, the known content of these reforms has been considered by this project. Of key relevance are:

- **PPF translation of the Melbourne Planning Scheme.** As the 'policy neutral' translation is anticipated to precede this amendment, the content of this amendment has been drafted using both the updated structure which will be implemented through this translation and the exhibited version which reflects the existing framework.
- **State review of ESD policy (Plan Melbourne Action 80).** An internal review of planning and building systems to support environmentally sustainable development outcomes is ongoing. This action was due to be completed at the end of 2018. At the time of writing there had been no material released, although a Discussion paper is anticipated to precede any reforms.
- **Delivery of metropolitan wide cooling and greening (Plan Melbourne Action 91).** This action includes a number of aspects relate to the delivery of urban forest strategies. The action includes preparing new guidelines and regulations that support greening via landscaping, green walls, green roofs and increases to the percentage of permeable site areas in developments but these have not yet been released.
- **Updates to and expansion of BADS standards.** This project includes review of the effectiveness of current energy efficiency standards and consideration of new standards related to 'green space' in common areas of buildings. A Discussion Paper was released in 2019 but updates to Clause 58 have yet to be implemented.





### Design and Development Overlay

The key component of this amendment, and the tool which applies the majority of the Standards, is the Design and Development Overlay (DDO). This Overlay is intended to implement requirements based on a demonstrated need to control built form and the built environment.

The intention is for this tool to be used to implement performance-based rather than prescriptive controls, however, there are numerous recent examples where, provided there is a robust justification, mandatory elements have been implemented into Victorian schemes using a DDO.

DDOs are not generally applied across a whole municipality, but rather are applied to specific areas where, for example, built form parameters relating to building heights and setbacks have been identified through a structure planning process. While it is acknowledged that the use of a DDO across the municipality is unusual and would not generally be the preferred approach, there are a number of considerations which result in this recommendation representing the best 'fit' of the current planning tools. These considerations include:

- The intent to include a number of mandatory standards as part of the amendment. The Design and Development Overlay is the most appropriate tool for the expression of mandatory built form requirements.
- The intent to apply the standards across the full spatial extent of the municipality which meant other options, such as utilising zone schedules was not available.
- The intent to apply the standards across a very broad range of development typologies/ land uses.

As a result of the above, and in particular the first two dot points, the choice of controls is essentially narrowed to the tool proposed. Planning practice in the State has long endorsed the principle of the 'best fit' tool, of which this is a clear example. Planning practice also generally seeks to contain explicit measures (such as the numerical measurements included in many of the Standards), in a schedule to a zone or overlay rather than in policy.

The DDO as drafted includes the following elements, the details of some of which are discussed further below:

- Design objectives which relate the broader objectives contained in policy to a building scale. The range of matters addressed in policy objectives are condensed to five in accordance with the Ministerial Direction on Form and Content.
- Under Buildings and Works, a series of parameters guiding the application of the controls are noted which cover:
  - Definitions which are relevant to the application of policy.
  - Identification of the typologies to which the controls apply.
  - Confirmation that no notice and appeal rights apply.
  - Identification that a mandatory minimum cannot be varied, other than in the case of an amendment to a permit where that does not increase the extent of non-compliance or if the 'alternate' approach to the 'green cover' standard is supported by the responsible authority.
  - Identification of the potential for an equivalent tool to be used where the outcomes are comparable and the parameters for any use of an equivalent tool.

- Also under Buildings and Works, the Standards are detailed in a tabular format identifying the requirement as relevant to the differing scales / typologies. The drafting also specifies what is required to meet the Standard.
- No requirements are specified in relation to Subdivision or Signs.
- Application requirements which require a response to the Decision Guidelines, as well as stating additional requirements where preferred Standards are not delivered. This section also provides a table identifying documentation required to be provided relevant to differing scales of development.
- Decision Guidelines drafted to specifically respond to the areas where discretion is to be applied through the Standards. For example, the merits of providing on-site renewable energy infrastructure having regard to the contribution the energy generated would make to reducing greenhouse gas emissions.

### RELATIONSHIP TO EXISTING AND FUTURE CONTROLS

In drafting the DDO, the relationship to existing controls which apply to specific precincts within the City of Melbourne was considered to ensure that the amendment did not duplicate existing content or create contradictions. Much of the existing content that addresses climate and biodiversity emergency responses or ESD however, is of a higher, 'strategic' level. Of current 'precinct' based controls, the only precinct where there was significant crossover with the proposed Standards is Fishermans Bend, where extensive controls have been applied relatively recently.



As a first principle, unless there were significant differences which underpinned the need for a more tailored, 'precinct specific' response identified, it was considered that the proposed Standards should be applied as consistently as possible across the municipality. The merits of 'breaking up' the DDO to apply it to different parts of the municipality were considered, including an alignment which considered the existing definitions within the scheme (for example, industrial areas, established residential areas, the central city and urban renewal areas). However, analysis indicated that the Standards as drafted would not differ between these areas and there was therefore no strategic basis to 'break up' the DDO, despite this being a theoretically better outcome than applying the DDO across the whole municipality.

The relevant policy relating to ESD outcomes in Fishermans Bend is not currently applied through the DDO which applies to that land, which is limited to more traditional built form matters such as building height and setbacks. Content which overlaps with that proposed through this amendment is contained in the Capital City Zone schedule, and in the Fishermans Bend local policy noted previously and will be updated accordingly based on the discussion at Page 17.

## CONTENT OF THE DDO

### Standards

Through drafting, the Standards in the DDO have been through a rigorous process of review which is detailed more fully in the preceding section of this report. The proposed Standards are based solidly in research-based evidence documented in the *GOCSAP (2019)* report. They were also informed by the professional expertise of the project teams involved, within the City of Melbourne and provided via stakeholder feedback at the various stages of their development.

It is important to note that the *GOCSAP (2019)* report identifies that the 'preferred' targets identified in that document are what fulfil Councils ambitions. In translating the Standards the 'preferred' Standards from the *GOCSAP (2019)* report were therefore considered to be the 'default', unless there was a specific circumstance where a 'lesser' minimum Standard needed to be included to allow Council discretion to respond to application and site specific conditions. The approach adopted in translation, whereby a number of the 'minimum standards' are expressed as discretionary (as opposed to mandatory as suggested by the *GOCSAP (2019)* report) meant that a number of Standards which had been expressed as 'preferred' in that document could, in fact, be expressed as a discretionary minimum in the amendment documentation.

As stated previously, one of the principles which underpinned the drafting of the Standards was that they were not 'rigid' and were sufficiently flexible to allow for alternative solutions to achieve the outcome sought. This is consistent with good planning practice and the principles which underpin the Victorian planning system. This flexibility is even more pertinent for to this amendment, as the urgency in delivering



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climate change responses in the built environment mean there is new research and technologies frequently driving changes to practice.

In almost all Standards, there is a 'benchmark' established, with a variety of ways this can be reached or a requirement which may be achieved differently by different developments, having regard to their context.

### Use of external tools

The standards contained in the *GOCSAP (2019)* report relied heavily on the use of external rating tools. The standards include references to Green Star, BESS, NatHERS, NABERS, and the City of Melbourne Green Factor Tool. The rationale for the use of these tools as articulated in that report pointed to independent certifications as providing consistent and understood methodologies, which are underpinned by strong governance and stakeholder engagement processes to be used, reducing the inconsistencies in interpretation of policy. It also identified that the use of the tools makes implementation easier, and reduced the need to include complex or technical content within the scheme. All tools are currently used by the development industry and are developed in consultation with the industry, ensuring they reflect existing industry capacity. While the use of external tools endorsed by previous Panels did not involve mandatory use, it is noted that the mandatory use of the tools is caveated by wording within the schedule that allows the use of alternate tools consistent "provided it is equivalent to the identified tool and results in comparable outcomes." Current policy applied to Fishermans Bend also establishes a precedent for the mandatory application of a Green Star requirement.

Green Star and BESS were selected as the 'overall' ratings tools as these are the most well-known, widely used and

respected tools for broad sustainability assessments and are the tools which cover the full scope of the themes. The approach adopted by the *GOCSAP (2019)* report to require more stringent or complex conditions in association with larger developments and less onerous standards or conditions on smaller developments was considered logical. Reflecting this in the application of Green Star to larger development and BESS to small to medium scale development was also considered logical and reflects established practice.

In utilising these external tools, the review process also involved a comparison between existing requirements under each of the rating tools and the Standards, to ensure that the processes are aligned. For example, the initial requirement for UHI responsive materials was increased to 75% to reflect the aligned Green Star standards, and the NABERS energy standard was increased by half a star to align with Green Star. The review sought to avoid a situation where a building was designed to meet a City of Melbourne minimum but where this did not allow them to deliver the corresponding credit in their achievement of the overarching Green Star / BESS rating. It is noted that at the time of writing Green Star credits were in the process of review so alignment has been benchmarked to the greatest degree possible, noting ongoing engagement with the Green Building Council of Australia.

### APPLICATION OF MANDATORY CONTROLS

The inclusion in this amendment of mandatory elements is both a critical part of the amendment and a part of the proposed Standards which was subject to rigorous review. As noted previously the number of mandatory elements proposed to be implemented through Amendment C376 has been significantly reduced from that originally proposed by the *GOSCAP (2019)* report. This is a natural and expected outcome of the review process.

This section of the report notes the Standards proposed for mandatory application and includes an assessment against the relevant 'tests' established through *Planning Practice Note 59: The Role of Mandatory Provisions in Planning Schemes*. Three key points are made upfront however:

- The first being that for most of the mandatory aspects of this amendment, a corresponding or comparable discretionary control is already in place in the Melbourne Planning Scheme, ensuring that the mandatory application of controls in this context in many cases represent an evolution of existing controls rather than a new control.
- Secondly, while Practice Note 59 is an important and relevant consideration, it's drafting in 2015 did not contemplate the kinds of development controls that may be needed to ensure that both the City of Melbourne, and Victoria more broadly may rely upon to deliver critical objectives in relation to climate change.
- Lastly, in most cases the mandatory part of the controls is the benchmark or rating which development must meet, with an inherent flexibility provided as to how each development meets this mandatory aspect, rather than an explicit development outcome as contemplated in the wording of the Practice Note.



The following mandatory controls are proposed by Amendment C376

- Minimum rating under broad ESD rating tools (Green Star and BESS)
- Minimum energy efficiency standard
- The percentage of a site area which must comprise materials which counter the UHIE
- Minimum quantity of green infrastructure to be provided on each site
- A requirement to provide waste and resource recovery facilities that meet the requirements of City's Guidelines
- A requirement to connect to precinct scale infrastructure or management plan
- Delivery of best practice water quality performance objectives
- Minimum delivery of 'alternative' (non-potable) water to be provided on each site
- Minimum water efficiency standard

### Mandatory Control Criteria

The following criteria are required to be used to assess whether or not the benefits of any proposed mandatory provision outweigh any loss of opportunity and the flexibility inherent in a performance based system.

#### Is the mandatory provision strategically supported?

*Does the proposed measure have a sound strategic basis having regard to the planning objective to be achieved and the planning policy framework generally?*

*Does the proposed mandatory measure clearly implement a policy or achieve an objective rather than just being a prescriptive tool?*

The strategic basis for the mandatory controls is outlined in numerous background documents and reports which highlight the aspects of the built environment which need to evolve to mitigate and adapt to climate change. The need for this mitigation and adaptation is accepted and enshrined in Victoria's *Climate Change Act (2017)*. The strategic basis in providing buildings that respond to the climate emergency is underpinned by the objectives of planning in Victoria. State policy supports every mandatory Standard proposed – from the integration of green cover, to energy efficiency to precinct infrastructure connectivity. The objectives of the City of Melbourne are explicit in relation to the outcomes they wish to see and the Standards proposed for mandatory application have been derived from associated objectives. The process of streamlining the mandatory Standards has ensured that mandatory controls are only proposed where they are necessary to implement a policy or achieve an objective.

#### Is the mandatory provision appropriate to the majority of proposals?

*Has the scope of the proposed mandatory provision been carefully considered to ensure that it will be appropriate in the vast majority of cases to limit the unnecessary loss of the flexibility and opportunity available in a performance based system?*

*Will the considered application of planning policy to be implemented by the proposed measure lead to the outcome prescribed by the measure in the vast majority of cases or is it merely one of a number of possible outcomes?*

The mandatory elements of the proposal have been drafted with consideration of the wider intent of the planning scheme. That is, while the standards set a mandatory minimum required to deliver objectives they do not identify the specifics of how this standard should be met. This inherent flexibility allows designers, architects and developers to identify the optimal way for each development to meet the required standards having regard to the sites context, other applicable planning controls and the objectives of the developer. This ensures their broad applicability.

#### Does the mandatory provision provide for the preferred outcome?

*Does a proposed mandatory provision resolve divergent opinions within the community as to a preferred outcome when a consistent outcome is necessary?*

*Does a proposed mandatory provision avoid the risk of adverse outcomes in circumstances where there is likely to be constant pressure for development inconsistent with planning policy?*

Experiences of relevant stakeholders has shown that the delivery of ESD outcomes through planning applications are



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often not considered upfront, which creates issues when such outcomes are addressed later, with the often significant costs of this 'retrofitting' strongly resisted by applicants. The discretionary nature of current controls means these aspects of design are frequently ignored or sidelined through the development process. The application of the mandatory controls sets a clear expectation that delivers the outcomes sought and reduces the likelihood of the outcomes being compromised by ongoing challenges or shortcomings in their delivery. It also makes clear to applicants what is considered the 'baseline' response and what is above this, avoiding situations where what one party may consider as 'standard practice' is framed by another as 'innovative best practice'.

Is there real evidence of development exceeding the proposed control?

*Will the majority of proposals not in accordance with the mandatory provision be clearly unacceptable?*

*Will the majority of proposals not in accordance with the requirements fail to meet the objectives of the control?*

*Will the majority of proposals not in accordance with the requirements lead to unacceptable planning outcomes?*

Background research has demonstrated that most buildings in the City of Melbourne have failed to deliver either the energy and water efficiencies or the green cover outcomes that are aligned with the Council objectives. It is critical that developments are designed to mitigate and adapt to climate change. The City's emissions target is less than 20 years away and the State target less than 30 years. The life cycles of buildings constructed now extends well beyond this timeframes.

Failure of buildings to deliver the key Standards such as green cover, energy and water efficiency will certainly fail to

meet the objectives of the control, and the addition of new stock to the existing number of buildings which contribute to greenhouse gas emissions through their design and which fail to provide adequate protection and amenity for their occupants as the climate changes can be considered to be an unacceptable planning outcome and one which is contrary to the objectives of planning in Victoria.

Will the mandatory provision reduce administrative costs?

*Will the proposed mandatory provision reduce costs imposed on councils, applicants and the community to the extent that it significantly outweighs the benefit of a performance based provision?*

One of the key drivers of good and equitable planning outcomes is upfront clarity about the expectations on developers and the equity of the application of controls, allowing the market to factor in any proposed implications and respond accordingly. The lack of debate as to what is appropriate to deliver in relation to climate change responses or broader ESD incentives will reduce costs for applicants and will offset costs to Council associated with implementation. Ensuring the relevant aspects are considered and built in early in the design phase can reduce the costs of delivering these aspects of building design. This is particularly the case for energy efficiency and green infrastructure measures. The cost saving to future residents from the increases in the energy and water efficiency of buildings is also noted. The cost benefits to Council, and the community, of planning controls which deliver certainly around emissions reduction and adaptation to climate change are also very significant and certainly outweigh the benefit of a performance based control, particularly given the majority of mandatory elements have been drafted to ensure they provide inbuilt flexibility as to how the mandatory standard is delivered.



## Capital City and Docklands Zone Schedules

To integrate the Sustainable Transport Standards, with regard to the key aspiration to increase the rates of bicycle parking provided a part of development, it was necessary for these Standards to be applied through schedules to the Capital City Zone (CCZ), and the Docklands Zone (DZ). This also allowed full suite of Sustainable Transport Standards to be implemented through a single tool.

As noted previously, the Sustainable Transport components of planning controls implemented in Fishermans Bend were integrated into the CCZ schedule. More recently in West Melbourne, the Special Use Zone schedule has been proposed to implement sustainable transport requirements. The following thinking has underpinned the approach to utilising the CCZ and DZ to implement the Standards:

- Both the Capital City Zone and Docklands Zone are highly flexible.
- They both apply to areas with similar characteristics to Fishermans Bend in relation to transport provision.
- There is currently no ability in applying the VPPs to schedule locally relevant requirements for bicycle parking.
- There were limited other tools available. Consideration was given to the inclusion of some of the content

regarding car parking with the Parking Overlay, various schedules of which align with the extent of the CCZ and DZ, however:

- The current framing of Parking Overlay in the City of Melbourne means that for many of these, a permit is not triggered unless a maximum number of parks is exceeded. This would mean that there would be potentially very few occasions on which the trigger for the delivery of the sustainable transport Standards was activated if any relevant content was included in the parking overlay
- In addition to the above, the content proposed was not fully aligned with the intent and structure of the Parking Overlay.
- The Parking Overlay did not allow for the introduction of proposed changes relating to subdivision.

Regarding the specifics of the content included in the relevant schedules to the CCZ and DZ (CCZ 1, 2, 3 and 5, DZ 1,2,3,5, and 6):

- Amendment to the 'Purpose' to include specific reference to aligning development with Councils ambitions to encourage a less car dependent transport system by facilitating the adoption of sustainable transport alternatives, and ensuring that opportunities to adapt and repurpose car parks are protected.
- Changes to Subdivision requirements comparable with those in Fishermans Bend requiring the retention of car parking areas as common property, with associated Application Requirements and Decision Guidelines documented.

- Inclusion of a new Buildings and Works requirement outlining minimum bicycle parking, bicycle facilities, motorcycle parking and car share space provision for various types of development.
- Requirements for the design and management of car parking spaces that they be adaptable and equipped to facilitate use of electric vehicles and that car share spaces be appropriately delivered.
- Inclusion of a Standard for the delivery of electric vehicles ready spaces, framed around the levels of immediate availability and future potential.
- New decision guidelines which specifically reference relevant matters rating to supporting modal shift, design of bicycles space, encouragement of electric vehicle use and support for transition of use.

Comparable updates were also made to CCZ4 as it applies to Fishermans Bend to ensure consistency.





# APPENDIX ONE: EVOLUTION OF STANDARDS





ARUP STANDARD	CHANGES	RATIONALE	AS DRAFTED
NOTE: application of standards to alterations and additions (or varying scales) is being resolved at the time of writing given this was not specifically addressed by the ARUP standards.			Note: table format extrapolated to equivalent wording
<b>ENERGY &amp; GREENHOUSE GAS EMISSIONS</b>			
<p><b>MINIMUM</b></p> <p>Developments must demonstrate Australian best practice in sustainability and climate change mitigation. This is achieved through the following certifications, where eligible:</p> <p>New developments &gt;5000sqm:</p> <ul style="list-style-type: none"> <li>• ≥ 5 Star Green Star Design &amp; As-Built (or contemporary equivalent)</li> <li>• ≥ 5.0 Star NABERS Energy</li> <li>• Average ≥ 7.5 NatHERS across multiple dwellings, and minimum 6.5 NatHERS rating for each dwelling</li> </ul> <p>New developments ≤ 5000sqm and non-residential building alterations &gt; 1000sqm:</p> <ul style="list-style-type: none"> <li>• ≥ 50% overall BESS score with ≥ 55% score in BESS Energy category</li> <li>• Average ≥ 7.5 NatHERS across multiple dwellings, and minimum 6.5 NatHERS rating for each dwelling</li> </ul> <p><b>PREFERRED</b></p> <p>In addition to the minimum requirements, developments should demonstrate world leadership in sustainable design and climate change mitigation. This is achieved through the following certifications, where eligible:</p> <p>New developments &gt;5000sqm:</p> <ul style="list-style-type: none"> <li>• 6 Star Green Star Design &amp; As-Built (or contemporary equivalent)</li> <li>• ≥ 5.5 Star NABERS Energy</li> </ul> <p>New developments ≤ 5000sqm:</p> <ul style="list-style-type: none"> <li>• &gt;70% BESS Score</li> </ul>	<p>Category split into OVERARCHING ESD and ENERGY EFFICIENCY AND RENEWABLES</p> <p>Clarification of the development typologies including:</p> <ul style="list-style-type: none"> <li>• A distinction between residential and non-residential uses</li> <li>• The use of dwelling numbers in relation to larger development</li> <li>• Clarification of sqm relating to 'gross' floor area</li> <li>• Additional detail re alterations and additions</li> </ul> <p>Adjustments to wording of standard:</p> <ul style="list-style-type: none"> <li>• (or contemporary equivalent) removed</li> </ul> <p>Should / Must demonstrate achievement of rating</p>	<p>The Green Star and BESS requirements cover a range of ESD related matters, not just Energy.</p> <p>Specific reference to renewables was preferred by Council.</p> <p>Better alignment with planning system</p> <p>Recognition that larger development often have mixed use components which are ancillary to the main use and that it is easier for planners if standard aligned to dwelling numbers. <i>Note: this amendment to the standards was subsequently removed in the interests of simplifying standards, and confirmed again with statutory planning.</i></p> <p>Gross sqm is what is currently used in Melbourne Planning Scheme and preferred by Council.</p> <p>Text to be added to any control to reflect broader Council position regard use of 'equivalent' tools as this condition should apply more broadly to the tools applied through the amendment.</p> <p>Wording around 'certification' adjusted as demonstrating an 'as built' certification at planning stage is problematic. Permit conditions would reflect the relevant requirements at planning and post occupation stages. Drafting of controls to address.</p> <p>Further review of the Energy standards undertaken by Hip v Hype identified that the proposed energy standards would play a limited role in meeting Councils zero emissions target as a 55% BESS energy benchmark was too low and recommended increasing this to 60 or 65%.</p> <p>This brings the energy efficiency requirement in line with the energy efficiency requirement in the Green Star tool.</p> <p>There are a number of site specific conditions which can influence the delivery of on-site renewable generation. In a central city context many sites may be constrained (eg. by overshadowing) so a mandatory standard could not be justified. However, it is still consistent with Council objectives to seek delivery of on-site generation where possible. The control is discretionary so there is the opportunity to demonstrate to Council why renewable energy is not able to be delivered on specific sites.</p>	<p><b>MINIMUM (mandatory)</b></p> <p>New buildings of more than 5000 sqm gross floor area</p> <p>Buildings and works which result in more than 5000 sqm additional gross floor area:</p> <p>5 Star Green Star Design and As Built.</p> <p>New buildings of equal to or less than 5000 sqm gross floor area</p> <p>Buildings and works which result in between 1000 and 5000 sqm additional gross floor area:</p> <p>A minimum 50% BESS score.</p> <p><b>PREFERRED</b></p> <p>New buildings of more than 5000 sqm gross floor area</p> <p>Buildings and works which result in more than 5000 sqm additional gross floor area:</p> <p>6 Star Green Star Design and As Built.</p> <p>New buildings of equal to or less than 5000 sqm gross floor area</p> <p>Buildings and works which result in between 1000 and 5000 sqm additional gross floor area:</p> <p>A minimum 70% BESS score.</p> <p><b>MINIMUM (mandatory)</b></p> <p>New buildings of more than 5000 sqm gross floor area</p> <p>Buildings and works which result in more than 5000 sqm additional gross floor area:</p> <p>For residential - An average of at least 7.5 star NatHERS rating across multiple dwellings, and a minimum of 6.5 star NatHERS rating for each dwelling.</p> <p>For non-residential - A minimum 5.5 Star NABERS Energy rating.</p> <p>New buildings of equal to or less than 5000 sqm gross floor area</p> <p>Buildings and works which result in between 1000 and 5000 sqm additional gross floor area:</p> <p>For all - A minimum 60% score in BESS Energy category.</p> <p>For residential - An average of at least 7.5 star NatHERS rating across multiple dwellings, and a minimum of 6.5 star NatHERS rating for each dwelling.</p> <p><b>PREFERRED</b></p> <p>New buildings of more than 5000 sqm gross floor area</p> <p>Buildings and works which result in more than 5000 sqm additional gross floor area:</p> <ul style="list-style-type: none"> <li>• For residential – none specified</li> <li>• For non-residential - A minimum 6 Star NABERS Energy rating.</li> </ul> <p>New buildings of equal to or less than 5000 sqm gross floor area</p> <p>Buildings and works which result in between 1000 and 5000 sqm additional gross floor area:</p> <p>A minimum 70% score in the BESS Energy category.</p>
	<p>55% BESS Energy rating increased to 60% for the minimum standard</p>		
	<p>NABERS Energy rating requirements increased by half a star</p>		
	<p>Standard consolidated and reworded. Mandatory application removed.</p>		

<p><b>MINIMUM</b> New developments must incorporate on-site renewable or low carbon energy generation where cost-effective.</p> <p><b>PREFERRED</b> New developments should incorporate on-site renewable or low carbon energy generation to the extent feasible.</p>	<p>Standard applied as a minimum and not just preferred. Reference broadened for 'gas' to 'non-renewable'.</p>	<p>Connections to gas infrastructure 'lock in' a non-renewable energy source which is incompatible with zero emissions targets. The change of 'minimum standards' from all being mandatory means this can be expressed as a 'discretionary minimum' not a 'preferred'.</p> <p>While gas is the primary energy source aside from electricity, there are potentially other non-renewable energy sources and the new wording ensures focus is on renewable energy.</p>	<p>All development should incorporate on-site renewable energy generation.</p>
<p><b>PREFERRED</b> New developments should reduce reliance on fossil fuels by avoiding gas use altogether, or be ready to transition to electrical services and appliances</p>			<p>Should not incorporate connections to gas services or other non-renewable energy.</p>
<b>SUSTAINABLE TRANSPORT</b>			
<p><b>MINIMUM</b> Developments must achieve the following rates of bicycle parking provision.</p> <p>New residential development</p> <ul style="list-style-type: none"> <li>• ≥ One secure bicycle space per dwelling</li> </ul> <p>New non-retail development</p> <ul style="list-style-type: none"> <li>• ≥ One bicycle parking space for 20% of regular occupants in the case of a new building without onsite car parking. Regular occupants are occupants who occupy the building for 2 hours a day on a daily basis (excludes weekends for buildings which operate on business days only).</li> </ul> <p>New retail development</p> <ul style="list-style-type: none"> <li>• ≥ One bicycle parking space for 5% of peak visitors in the case of a new building without onsite car parking.</li> </ul> <p><b>PREFERRED</b> Developments must achieve the following rates of bicycle parking provision.</p> <p>New residential development</p> <ul style="list-style-type: none"> <li>• ≥ One bicycle space per bedroom for developments</li> </ul> <p>New non-retail development</p> <ul style="list-style-type: none"> <li>• ≥ One bicycle parking space for 10% of regular occupants in the case of a new building without onsite car parking. Regular occupants are occupants who occupy the building for 2 hours a day on a daily basis (excludes weekends for buildings which operate on business days only).</li> </ul>	<p>Standard wording adjusted to reflect land use terminology</p> <p>Standard applied as discretionary rather than mandatory.</p> <p>Preferred standard not pursued.</p> <p>Standard only to be applied to Capital City and Docklands zoned land</p> <p>An additional standard addressing end-of-trip facilities required to support the increased bicycle number were added</p> <p>Actual numerical expression of requirements aligned with the findings of Boyle report which is the underlying evidence base..</p>	<p>'Non-retail' is not a land use planning term, so changed to 'Place of Assembly, Office or Education use' consistent with planning system terminology.</p> <p>There may have been situations where the application of the Standard was not appropriate depending on the particulars of a site and its approach to sustainable transport and so inclusion of the Standard should be as discretionary rather than mandatory.</p> <p>The preferred standard may have been excessive in a number of examples (for instance Boyle report found some uses oversupplied) and that the minimum standard still represented a significant increase above the default requirements under 52.34.</p> <p>Changes to bicycle parking rates are not able to be made across the municipality. The only mechanism available to address changes is through building and works requirements in zone schedules for which a precedent was established in Fishermans Bend. In addition, the evidence base referenced in the ARUP report for the standards is Fishermans Bend, and it is therefore considered that the standards should only be applied to comparable areas until such time as a further evidence base is developed.</p> <p>Increases in the number of spaces provided mean that there will be an associated increase in demand for end-of-trip facilities which needed to be included alongside the proposed standard.</p> <p>Standards were expressed in line with the applicable Green Star credit (i.e. % of regular occupants) but this is difficult to apply at a planning assessment phase of development and creates a disconnection when applied to smaller scale development to which Green Star requirements are not proposed to apply. Closer alignment with standard expression used in planning schemes assists in the usability.</p> <p>Updates to the rates and the uses to which the standard would apply undertaken to provide greater alignment with Boyle report which provides the most comprehensive evidence base, noting this may need to be simplified somewhat to reflect the application of controls through zones schedule rather than theoretical 52.34 local schedule.</p>	<p>New Dwelling.:</p> <ul style="list-style-type: none"> <li>• A minimum of one secure bicycle space per dwelling.</li> <li>• Two secure visitor bicycle spaces per 5 dwellings.</li> </ul> <p>New Retail or Office development, including buildings and works which result in more than 1000sqm additional gross floor area</p> <ul style="list-style-type: none"> <li>• A minimum of one secure employee bicycle space per 100sqm of net floor area.</li> <li>• One secure bicycle visitor space per 100sqm of net floor area, with a minimum of four visitor spaces provided.</li> <li>• If 5 or more employee bicycle spaces are required, 1 shower for the first 5 employee bicycle spaces, plus 1 to each 10 employee bicycle spaces thereafter.</li> <li>• 1 change room or direct access to a communal change room to each shower. The change room may be a combined shower and change room.</li> <li>• If 20 or more employee bicycle spaces are required, personal lockers are to be provided with each bicycle space required.</li> <li>• If more than 30 bicycle spaces are required then a change room must be provided with direct access to each shower. The change room may be a combined shower and change room.</li> </ul> <p>New Place of Assembly, Minor sports and recreation facility or Education Centre development including buildings and works which result in more than 1000sqm additional gross floor area.</p> <ul style="list-style-type: none"> <li>• A minimum of one secure employee bicycle space per 100sqm of net floor area.</li> <li>• One secure bicycle visitor space per 100sqm of net floor area, with a minimum of eight visitor spaces provided.</li> <li>• If 5 or more employee bicycle spaces are required, 1 shower for the first 5 employee bicycle spaces, plus 1 to each 10 employee bicycle spaces thereafter.</li> <li>• 1 change room or direct access to a communal change room to each shower. The change room may be a combined shower and change room.</li> <li>• If 20 or more employee bicycle spaces are required, personal lockers are to be provided with each bicycle space required.</li> <li>• If more than 30 bicycle spaces are required then a change room must be provided with direct access to each shower. The change room may be a combined shower and change room</li> </ul>





<p><u>NOTE:</u> Additional Standards added regarding car share and motorcycle parking spaces</p>		<p>This was an identified gap within the Arup report and it was felt there was sufficient evidence and broad support for these matters to be addressed at planning stage.</p>	<p>New Dwellings: A minimum of one motorcycle space per 50 dwellings.</p> <p>New Place of Assembly, Minor sports and recreation facility or Education Centre development: A minimum of one motorcycle space per 40 car parking spaces.</p> <p>Developments of more than 50 dwellings: 2 car share spaces plus an additional 1 space per 25 additional dwellings.</p> <p>New Retail or Office development, Place of Assembly or Education Centre, including buildings and works which result in more than 1000sqm additional gross floor area: 1 car share space per 60 car parking spaces</p> <p>The location and design of car share bays should be:</p> <ul style="list-style-type: none"> <li>Publicly accessible</li> <li>In the most accessible level of a multi-storey car park</li> <li>Well-lit and a short distance from an entry point, lift or staircase</li> <li>In a location with a minimum height clearance to allow access by a cleaning van</li> </ul>
<p><u>NOTE:</u> Additional Standards added regarding the adaptability of car parking spaces</p>		<p>This was an identified gap within the Arup report and it was felt there was sufficient evidence and broad support for these matters to be addressed at planning stage. The Standards are based on those proposed in West Melbourne (which have been review by an independent panel) and those implemented in Fishermans Bend.</p>	<p>Car parking areas must be retained in a single or a consolidated title as common property, unless the responsible authority agrees otherwise.</p> <p>Where car parking facilities are provided as part of an application they should:</p> <ul style="list-style-type: none"> <li>Be designed to facilitate the future adaptation to support alternate uses in the short and long term.</li> </ul>
<p><u>NOTE:</u> Additional Standards added regarding the incorporation of EV technology</p>		<p>This was an identified gap within the Arup report and it was felt there was sufficient evidence and broad support for these matters to be addressed at planning stage. Specifics of the Standard were developed by Council on the basis of international precedents.</p>	<p>Car parking facilities should be designed in accordance with the following Design Standards:</p> <ul style="list-style-type: none"> <li>Development of car parking areas should include the delivery of infrastructure (including electricity supply and signage), space and metering arrangements sufficient to enable the installation of electric vehicle (EV) charging points</li> </ul> <p>Where a facility is proposed with 50 car parking spaces or more, the following should be provided:</p> <ul style="list-style-type: none"> <li>Electric vehicle (EV) ready parking bays for a minimum of 5% parking spaces</li> <li>Sufficient infrastructure capacity to accommodate EV charging for 20% of parking spaces</li> <li>Electric vehicle charging points at all allocated shared car spaces.</li> </ul>
<p><b>WASTE &amp; RESOURCE RECOVERY</b></p>			
<p>MINIMUM Developments must provide a waste management plan that optimises waste storage and efficient collection methods. This is achieved through meeting City of Melbourne's Waste Management Guidelines.</p>	<p>Rephrased, and partially transferred to an Application Requirement</p>	<p>The provision of the plan is the mechanism for delivery as opposed to the Standard itself.</p>	<p>Must provide waste and resource recovery facilities that meet the requirements of the City of Melbourne's Guidelines for Waste and Resource Recovery Management Plans.</p>
<p>Developments must establish separate collection for recycling, hard waste, and food and green waste.</p>	<p>Deleted</p>	<p>There are potential changes to waste management being introduced at a state level, as well as at a local level. The requirement for a WMP in accordance with the City of Melbourne Guidelines allows for the preferred waste management approach to be fully documented outside the planning scheme and to be updated over time as changes in practice are implemented, without the need for a PSA.</p>	

Developments must meet the requirements of the precinct waste management plan, if there is one in place.			Must meet the requirements of a precinct waste management plan, if there is one in place.
<p><b>PREFERRED</b></p> <p>In addition to minimum requirements, provide a waste management plan that:</p> <ul style="list-style-type: none"> <li>• Combines commercial and residential waste storage</li> <li>• Provides for the collection of additional waste streams including e-waste, clothing, cosmetics, etc</li> <li>• Share storage or collections with adjacent developments.</li> </ul>	Deleted	There are potential changes to waste management being introduced at a state level, as well as at a local level. The requirement for a WMP in accordance with the City of Melbourne Guidelines allows for the preferred waste management approach to be fully documented outside the planning scheme and to be updated over time as changes in practice are implemented, without the need for a PSA.	Should manage construction waste to minimise landfill and maximise resource recovery.
<b>NOTE:</b> Additional Standard added regarding the management of construction waste		Development should manage construction waste to minimise landfill and maximise resource recovery. This is consistent with the overall rationale for the project and is one area where embodied energy can be addressed in terms of adaptation and reuse. Existing council processes relating to permit conditions for CMPs support this.	Should manage construction waste to minimise landfill and maximise resource recovery..
<b>URBAN HEAT ISLAND RESPONSE</b>			
<p><b>MINIMUM</b></p> <p>At least 70% of the development's total site area must comprise building or landscape elements that reduce the impact of the urban heat island effect including:</p> <ul style="list-style-type: none"> <li>• Vegetation, green roofs and water bodies</li> <li>• Roof materials, shade structures or hard scaping materials with high solar reflectivity index, including solar panels</li> </ul>	% changed to 75%	The corresponding Green Star credit from which the original requirement was derived, has a 75% figure. Planning should be consistent with the underlying target.	Must provide the equivalent of at least 75% of the development's total site area as building or landscape elements that reduce the impact of the urban heat island effect. These elements include: <ul style="list-style-type: none"> <li>• Green infrastructure</li> <li>• Roof or facade materials with a high solar reflectivity</li> <li>• Solar panels or shading structures</li> <li>• Hardscaping materials with a high solar reflectivity</li> </ul>
<b>NOTE:</b> Additional Standards added		Standards regarding shading of façade moved from Urban Ecology as this related to building structure as well. Permeable paving and mechanical heating and cooling standards added. These areas have been identified as being of key importance and were not addressed by wording of the current standard which relates more specifically to building materials and green cover.	Should ensure non-glazed facade materials exposed to summer sun have a high solar reflectivity Should use passive cooling and heating techniques to reduce reliance on artificial heating and cooling Should utilise paving treatments which assist in cooling, such as permeable paving or light coloured aggregates, where applicable.
<b>URBAN ECOLOGY</b> <i>Note: standards as drafted were clearly identified as needing further investigations which is reflected in the review below</i>			
<p><b>MINIMUM</b></p> <p>Trees with a low, moderate or retention value may be removed. Trees with a medium retention value can be replaced with a 1:1 tree with a tree of an equivalent canopy and ecological value.</p> <p><b>PREFERRED</b></p> <p>Where trees are deemed to have high or site tree retention value they should be replaced at a 2:1 ratio with a tree of an equivalent canopy and ecological value.</p> <p>Trees deemed to have very high site tree retention value are to be replaced at a 3:1 ratio with a tree of an equivalent canopy and ecological value.</p>	Deleted	There was not a sufficient evidence base provided to justify introduction of these standards. Retention of canopy trees was identified as an area requiring further investigations.	Should ensure green cover proposed: <ul style="list-style-type: none"> <li>• Supports the creation of complex and biodiverse ecosystems.</li> <li>• Provides a layered approach, incorporating both understorey and canopy planting.</li> <li>• Provides either native, indigenous or climate change resilient exotic plants that provide resources for native fauna.</li> <li>• Supports the creation of vegetation links between areas of high biodiversity through planting selection and design where applicable.</li> <li>• Retains existing mature canopy trees or vegetation which contributes to habitat for native fauna.</li> <li>• Uses species selected drawn from the City of Melbourne's preferred species list.</li> </ul>
<p><b>MINIMUM</b></p> <p>Replacement or supplementary vegetation must not result in a reduction of the site's landscape character, amenity, and ecological value of the development.</p>	Deleted	Considered to be too vague for application as a Standard	
<p><b>MINIMUM</b></p> <p>Overstorey and understorey vegetation must be protected enhanced, and in some instances, offset, exempting trees declared 'noxious weeds'. Where tree controls are attached to the site's planning overlay those significant trees or protected trees are to be retained.</p> <p><b>PREFERRED</b></p> <p>At least 20% of the total site area should provide understorey vegetation habitat.</p>	Deleted	There was not a sufficient evidence base provided to justify introduction of these standards. If planning controls are in place to protect significant trees these are considered to be the appropriate mechanism for decisions regarding retention. The importance of understorey vegetation is both built into the Green Factor Tool and reflected in standards requiring a 'layered' approach to vegetation.	



<p>MINIMUM</p> <p>If native vegetation is removed, it must be reinstated to an equivalent or improved canopy and ecological value.</p> <p>PREFERRED</p> <p>Replacement or supplementary vegetation should improve the site's landscape character, amenity, and ecological value.</p>	Deleted	Replacement of native vegetation addressed by relevant state level planning controls.	
<p>MINIMUM</p> <p>Species selection (including green walls and roofs) should focus on improving ecosystem health including whilst being mindful of site constraints and microclimates (aspect, wind etc.) to ensure long term planting viability and green infrastructure benefits.</p>	Deleted	Not necessary to state in controls.	
<p>MINIMUM</p> <p>Species selection, whether native or exotic, should consider the strategies outlined in the Nature in the City Strategy, Urban Forest Strategy and any precinct plans.</p> <p>MINIMUM</p> <p>Designers must consider species selected for use in urban projects from the City of Melbourne's Urban Nature Planting Guide or pre-1750 Ecological Vegetation Classes (EVC) and consider the growing conditions, planting characteristics and biodiversity benefits.</p> <p>PREFERRED</p> <p>Proposed vegetation should include locally indigenous vegetation (Greater Melbourne)/native vegetation (Victorian according to planning scheme) where microclimate and landscape character of the immediate context permits. Native understorey vegetation volume and biodiversity is to be maximised.</p>	Deleted	Directions regarding species selection were considered too detailed for planning application stage and were integrated into broader standard requirements and a link to a preferred specific list. No precinct plans exist, but where these were developed, they could be built into the weightings of the green Factor Tool if needed.	
<p>MINIMUM</p> <p>Impacts of proposed development to existing vegetation that might affect flora and fauna are to be minimised. Developments must to demonstrate how adverse impacts have been minimised.</p>	Deleted	Considered too broad. Requiring all development to demonstrate have all impacts on any flora and fauna have been minimised was considered too onerous.	
<p>MINIMUM</p> <p>The site must achieve the equivalent of ≥ 40 per cent site area as horizontal green cover, as demonstrated using City of Melbourne's green infrastructure assessment tool. Equivalence is defined as the ability for green infrastructure to provide ecosystem service outcomes.</p> <p>Green cover includes tree, shrub, grasses and lawn and excludes non-plantable surfaces (hard non-permeable and permeable).</p>	Specified site area was adjusted to be expressed in relation to the Green Factor Score	The further refinement of the Green Factor Tool post drafting of ARUP standards has encapsulated the issue of equivalence and so working was adjusted to ensure standard was aligned with outputs of the tool (which is a 'score').	<p>Must be designed and constructed to achieve a minimum Green Factor score of 0.55 using City of Melbourne's Green Factor Tool.</p> <p>Should be designed and constructed to achieve a minimum Green Factor score of 0.55 using City of Melbourne's Green Factor Tool.</p>
	Reference adjusted to City of Melbourne's Green Factor Tool	Name has been confirmed and so should be referenced.	
	Definition of green cover relocated	Green cover referenced in various places and so a definition was include with other relevant definitions rather than as part of the standard.	
	Application of standard clarified.	Calibrating and testing of the Green Factor score related to new buildings. Adding green cover to 'alterations and additions', whilst likely to be possible given the flexibility of the tool, is not as certain based on existing conditions and so should be applied only on a discretionary basis.	
<p><u>NOTE:</u> Alternate pathway specified</p>		<p>In response to some concern that some development may not need to utilise the Green Factor Tool and that there may be some circumstances where this is not considered necessary by council and alternate pathway was drafted, which specified the 'equivalence' noted in the original standard, but which also addressed the key parameters required (i.e it would not meet objectives to just provide 40% of a site as lawn).</p> <p>If it can be demonstrated to the satisfaction of the responsible authority that the use of the Green Factor Tool is not practical, at least 40% of the total site area will be provided as green cover, including by satisfying the following elements:</p> <ul style="list-style-type: none"> <li>A minimum of 65% of the required green cover as new or existing canopy planting and a minimum of 35% as</li> </ul>	



			<p>understorey planting. Canopy planting and understorey planting can overlap.</p> <ul style="list-style-type: none"> <li>Species selection and associated planting scheme of native and / or indigenous species which provides habitat for native fauna to the satisfaction of the responsible authority.</li> <li>Green cover which is located to provide maximum benefit in relation of cooling of the adjoining public realm to the satisfaction of the responsible authority. Green walls or facades under this alternate delivery must directly abut the public realm and be on the lower levels of the building.</li> </ul>
<p><b>MINIMUM</b> Where they are not green roofs, roofs orientated to the north must be adaptable for sustainability initiatives, either for energy generation or retrofit of a future green roof, including drainage connections, structure and access.</p>	Deleted	This was considered too onerous and had not been tested for feasibility.	
<p><b>MINIMUM</b> Facade areas exposed to summer sun must incorporate green wall, green façade, or have integrated shading. Shade structures must not detrimentally impact existing vegetation.</p>	Reworded and moved to UHI standard	Relates to the temperature regulation aspect of urban ecology and was not restricted to ecology related outcomes (i.e. or have integrated shading)	
<p><b>PREFERRED</b> Open space should be provided around retained existing trees.</p>	Deleted	The intention of this standard was unclear, but tree protection is generally addressed by tree protection zones and site planning.	
<p><b>PREFERRED</b> Trees that provide important urban wildlife linkages should be retained.</p>	Deleted	The intention of this was integrated but further investigations regarding tree retention were recommended.	
<p><b>PREFERRED</b> Where development necessitates the removal of trees that provide habitat for hollow-dwelling species such as parrots, possums and bats, simulated natural hollows (roosting boxes) should be installed in existing retained trees, or on proposed buildings or wooden/steel poles.</p>	Deleted	Too detailed and beyond the considered scope of controls, noting recommendation for further consideration of tree retention / replacement controls.	
<b>IWM – STORMWATER MANAGEMENT</b>			
<p><b>MINIMUM</b> Development must achieve the best practice water quality performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999 (or as amended). Currently, these water quality performance objectives are (expressed as retention of typical urban annual load):</p> <ul style="list-style-type: none"> <li>Suspended Solids - 80%</li> <li>Total Nitrogen - 45%</li> <li>Total Phosphorus - 45%</li> <li>Litter - 70%</li> </ul> <p><b>PREFERRED</b> In addition to the minimum requirements, developments should achieve the following water quality performance objectives (expressed as retention of typical urban annual load):</p> <ul style="list-style-type: none"> <li>Total Phosphorus (TP) – 60%</li> <li>Litter – 90%</li> <li>Total Petroleum Hydrocarbons – 90%</li> <li>Free Oils – 90%</li> </ul>	<p>Description of current objectives deleted.</p> <p>Deletion of the preferred standard</p>	<p>There is no need to specify these objectives and their inclusion may date the standard, as BEPM currently being updated.</p> <p>Adjustment to wording to be consistent with that of minimum standard was not possible and there was a misalignment between the minimum standard, the preferred standard and any likely outcome of update to BEPM. It was unclear where %s in standard came from, and the use of Green Star credit requirements may not be appropriate across all scales / typologies of development.</p>	<p>Must achieve the best practice water quality performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999 (or as amended).</p>



<p>Developments must use stormwater treatment measures that improve the quality and reduce the flow of water discharged to waterways. This can include but is not limited to:</p> <ul style="list-style-type: none"> <li>• Collection and reuse of rainwater and stormwater on site</li> <li>• Vegetated swales and buffer strips</li> <li>• Rain gardens</li> <li>• Installation of water recycling systems</li> <li>• Multiple uses of water within a single manufacturing site</li> <li>• Direction of flow from impervious ground surfaces to landscaped areas</li> </ul>	Partially deleted and partially combined with preferred standard below	This is partly a repetition of existing state level policy and is also a definition which may be better placed in a glossary.
<p><b>PREFERRED</b></p> <p>In addition to the minimum requirements, developments should use of measures to prevent litter being carried off-site in stormwater flows including:</p> <ul style="list-style-type: none"> <li>• Appropriately designed waste enclosures and storage bins, and—the use of litter traps for developments with the potential to generate significant amounts of litter.</li> <li>• Use of vegetation, where practicable (to be irrigated with rainwater/stormwater) to manage the quality and quantity of stormwater.</li> </ul>	Partially deleted and partially combined with standard above	See above.
<p><b>PREFERRED</b></p> <p>The site area covered by porous surfaces should be at least:</p> <ul style="list-style-type: none"> <li>• The minimum area specified in a schedule to the zone; or</li> <li>• If no minimum area is specified in a schedule to the zone, 20 per cent of the site.</li> <li>• Allow for increases in rainfall intensity due to climate change when calculating the above</li> </ul>	Deleted	There was insufficient evidence behind the permeability requirements, and there were a number of scenarios where the standard would have provide problematic. This is an area where further research is required before a standard is introduced.
<b>IWM – WATER EFFICIENCY</b>		
<p><b>MINIMUM</b></p> <p>Developments must:</p> <ul style="list-style-type: none"> <li>• Connect to a recycled water source if available,</li> <li>• Install rainwater tank to: support on-site green infrastructure; or supply a minimum of 10% of internal water demand</li> </ul> <p><b>PREFERRED</b></p> <p>Developments should use alternative water for all non-potable uses on-site e.g. rainwater, stormwater or recycled water</p>	<p>Mandatory application of the rainwater tank and % internal water demand removed / reworded</p> <p>Preferred standard applied as minimum</p>	<p>Onsite rainwater tanks may not be required if precinct based recycled water connection is available so wording adjusted. Mandatory application to alterations and additions not considered appropriate as there may be circumstances where installation of a tank is not achievable.</p> <p>The standard is discretionary and to promote IWM outcomes the use of alternate source for non-potable water should be considered a minimum unless there are specific circumstances where it can be demonstrated that this is not appropriate. IWM key area of reform at State level and needs to be considered at planning stage.</p>
		<p>All development</p> <p>Should use alternative water for all non-potable uses on-site where technically achievable.</p> <p>New buildings</p> <p>Buildings and works which result in more than 5000 sqm additional gross floor area:</p> <p>Must connect to a precinct scale recycled water source if available. Unless connected to a recycled water source, must install a rainwater tank to:</p> <ul style="list-style-type: none"> <li>• support on-site green cover or</li> <li>• supply a minimum of 10% of internal water demand.</li> </ul> <p>Buildings and works which result in between 1000 and 5000 sqm additional gross floor area:</p> <p>Should connect to a precinct scale recycled water source if available.</p> <p>Unless connected to a recycled water source should install a rainwater tank to support on-site green cover or supply a minimum of 10% of internal water demand.</p>
<p><b>MINIMUM</b></p> <p>New developments &gt;5000sqm must achieve:</p> <ul style="list-style-type: none"> <li>• ≥ 4 Star NABERS Water unless demonstrated to require additional water to sustain green infrastructure.</li> </ul> <p>New developments ≤ 5000sqm and non-residential building alterations &gt; 1000sqm:</p> <ul style="list-style-type: none"> <li>• ≥ 50% score in BESS Water category, unless demonstrated to require additional water to sustain green infrastructure.</li> </ul>	<p>NABERS Water credit not used for residential uses, and instead a replacement requirement to deliver associated Green Star Credit added for residential development</p> <p>Reworded to remove the reference to exceptions for additional water.</p>	<p>The NABERS standard for residential only applies to communal areas which may not deliver preferred outcomes. A comparable standard which is applied through Green Star was introduced to reflect this gap.</p> <p>While additional requirement are acknowledged in controls through decision guidelines, as a mandatory standard, allowing an exception creates confusion as to the mandatory nature. In addition, the</p> <p>New buildings of more than 5000 sqm gross floor area</p> <p>Buildings and works which result in more than 5000 sqm additional gross floor area:</p> <p>For residential - the relevant Water credit under 5 Star Green Star Design and As Built rating.</p> <p>For non-residential - A minimum 4 Star NABERS Water rating.</p> <p>New buildings of equal to or less than 5000 sqm gross floor area</p>

		external rating tools referenced may not be designed to allow for the factoring in of such an allowance.	Buildings and works which result in between 1000 and 5000 sqm additional gross floor area: A minimum 50% score in BESS Water category.
<b>IWM – INTEGRATED FLOOD MANAGEMENT</b>			
Essential services, such as power connections, switchboards and other critical services must be located to address potential flooding events.	Deleted	Content to be addressed in flood updates	
<p>PREFERRED</p> <p>In addition to the minimum requirements:</p> <ul style="list-style-type: none"> <li>• Design elements and materials should be resilient including water proof doors and windows, elevated power outlets and the like.</li> <li>• Land uses at ground floor level should be able to easily recover from the impacts of temporary flooding.</li> <li>• Any level change required between street level and internal ground floor should be integrated into the design of the building to maintain good physical and visual connection between the street and internal ground floor.</li> <li>• Only consider the raising of internal ground floor level above street level as a last resort, except where the implementation of other measures coupled with an evidence-based approach to risk management reasonably necessitates raising internal floor levels above street level.</li> </ul>	Deleted	Content to be addressed in flood updates	





# APPENDIX TWO: SUPPORTING OBJECTIVES



The following objectives which will form part of the planning scheme are supported by the application of the **Overarching ESD Standard**.

Existing State

- To minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning. (13.01)
- To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions. (14.02)

New Objectives implemented through Amendment C376

- To ensure buildings are energy efficient and align with the City of Melbourne's target of zero emissions by 2040. (DDO built form specific objective)
- To ensure the design of buildings address climate change impacts including water shortages and the urban heat island effect, and minimises impacts on the local environment. (DDO built form specific objective)
- To align development outcomes with a requirement for zero carbon emissions by 2040.
- To ensure buildings and public spaces support community resilience to a changing climate.
- To ensure objectives for ESD are supported by appropriate implementation.
- To support and encourage the local delivery of international best practice and innovations in ESD.

The following objectives which will form part of the planning scheme are supported by the application of the **Energy Efficiency & Renewables Standard**.

Existing State

- To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions. (14.02)
- To facilitate appropriate development of energy supply infrastructure. (19.01)
- To promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met. (19.01)

New Objectives implemented through Amendment C376

- To ensure buildings are energy efficient and align with the City of Melbourne's target of zero emissions by 2040. (DDO built form specific objective)
- To deliver buildings which are carbon neutral or carbon positive across building and operational stages.
- To optimise the use of passive design elements to deliver energy efficient outcomes
- To facilitate increased delivery of local renewable energy generation by maximising available opportunities
- To discourage development which incorporates infrastructure which is not aligned with a zero emissions future

The following objectives which will form part of the planning scheme are supported by the application of the **Waste & Resource Recovery Standard**.

Existing State

- To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.(14.02)
- To reduce waste and maximise resource recovery so as to reduce reliance on landfills and minimise environmental, community amenity and public health impacts. (19.03)

New Objectives implemented through Amendment C376

- To support opportunities for precinct scale environmentally sustainable design outcomes, including the transition to a circular economy. (DDO built form specific objective)
- To ensure opportunities for precinct scale efficiencies to minimise waste and maximise resource recovery are supported.
- To support the consideration of whole-of-lifecycle impacts in building design, construction and operation.
- To ensure that spatial requirements to support sustainable waste management are considered in the design of buildings



The following objectives which will form part of the planning scheme are supported by the application of the **Urban Heat Reduction Standard**.

#### Existing State

- To minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning.(13.01)
- To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.(14.02)

#### New Objectives implemented through Amendment C376

- To ensure the design of buildings address climate change impacts including, water shortages and the urban heat island effect, and minimises impacts on the local environment. (DDO built form specific objective)
- To increase the quantity, quality and distribution of green cover to improve urban cooling and biodiversity outcomes. (DDO built form specific objective)
- To maximise the delivery of green cover across the private realm within the City of Melbourne in recognition of the critical role vegetation plays in reducing the Urban Heat Island effect
- To encourage the consideration of heat load in the selection of building materials and finishes.
- To encourage the use of permeable or other heat reducing paving treatments in outdoor areas.

The following objectives which will form part of the planning scheme are supported by the application of the **Urban Ecology Standard**.

#### Existing State

- To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.(14.02)

#### New Objectives implemented through Amendment C376

- To increase the quantity, quality and distribution of green cover to improve urban cooling and biodiversity outcomes. (DDO built form specific objective)
- To increase the delivery of green cover which supports and increases the resilience of local biodiversity.
- To recognise the important role that green cover plays in increasing community resilience to urban heat, and in increased amenity.
- To facilitate increased green cover in a manner which reflects the scale and context of development.
- To encourage the use of green cover to improve thermal mass of buildings and increase their energy efficiency.
- To protect existing canopy vegetation and habitat in recognition of improved biodiversity and heat reduction outcomes generally associated with retention rather than replacement.
- To ensure that the delivery of green cover is sustainable, having consideration for climate change projections.

The following objectives which will form part of the planning scheme are supported by the application of the **Integrated Water Management Standard**.

#### Existing State

##### *Stormwater management*

- To protect and enhance river corridors, waterways, lakes and wetlands. (12.03)
- To protect water quality.(14.02)
- To sustainably manage water supply, water resources, wastewater, drainage and stormwater through an integrated water management approach. (19.03)

##### *Water efficiency*

- To sustainably manage water supply, water resources, wastewater, drainage and stormwater through an integrated water management approach. (19.03)

#### New Objectives implemented through Amendment C376

- To ensure the design of buildings address climate change impacts including water shortages and the urban heat island effect, and minimises impacts on the local environment. (DDO built form specific objective)

##### *Stormwater management*

- To integrate stormwater management with other systems to reduce run off and support water efficiency and urban ecology objectives.
- To reduce the impacts of peak flows and flood events on the both the urban and natural environment.
- To encourage the integration of water sensitive urban design principles throughout developments.
- To support innovation in the retention and reuse of stormwater.



#### *Water efficiency*

- To encourage the appropriate use of alternative non-potable water sources including rainwater, stormwater, greywater and blackwater.
- To support precinct scale infrastructure which improves water efficiency
- To ensure development supports the efficient use of water resources through the integration of appropriate infrastructure and design elements.
- To ensure development meets or exceeds minimum standards in water efficiency

The following objectives which will form part of the planning scheme are supported by the application of the **Sustainable Transport Standard**.

#### Existing State

- To promote the use of sustainable personal transport. (18.02)

#### New Objectives implemented through Amendment C376

- To support long term sustainable transport patterns and minimise road congestion
- To ensure parking facilities are provided efficiently and flexibly to meet changing community needs including reduced usage of private vehicles
- To minimise the negative impacts of parking facilities on the public realm and transport networks.
- To provide for the future adaptation of car parking to other uses and innovations in transport technology.