We congratulate Infrastructure Victoria on its excellent, important and thoughtful 30-year draft strategy which, if fully implemented, would protect, enhance and future proof Victoria. Overall, we strongly support its overall objectives and general directions.

In this submission, we offer some suggested edits to existing recommendations; identify omissions that could strengthen the strategy and offer additional recommendations. We also contribute some additional evidence (both published reports and unpublished data) to support any recommended changes.

The main focus of our comments relate to enhancing urban liveability and health and wellbeing. However, drawing on recent reports with evidence-based recommendations prepared by multidisciplinary teams supported by RMIT’s Urban Futures Enabling Platform we address some of the broader issues related to mitigating and adapting to climate change in suburban Melbourne.

**Manage urban change**

An obvious omission from this section is explicit reference to delivering the 20-minute neighbourhood and the integrated land use, transport and infrastructure planning and investments required to do so. It is strongly recommended that this be addressed up front and, in this section, because **delivering a city of villages made up of 20-minute neighbourhoods would future proof Melbourne creating a more resilient, sustainable and healthy city which would help achieve objective 2 of the 30-year plan.**

Of note, the Government’s 20-minute neighbourhood does not include access to employment. Hence, the 30-year strategy should ensure that there is active and public transport infrastructure that facilitates access to employment opportunities.

**2.1 Integrate land use and infrastructure planning.**

We strongly support recommendations in this section, but recommend it explicitly state integrating land use, transport and infrastructure planning. We also suggest making it explicit that ‘infrastructure’ includes social infrastructure which is also essential infrastructure.

We strongly support the recommendation to publish Victoria’s transport plan. Transport planning must focus on sustainable mobility including active and public transport, and this requires:

1. a commitment to cycling infrastructure within 5km of train stations and activity centres (recommendation 39 – see below for suggested addition);
(2) a commitment to delivering a city of villages made up of 20-minute neighbourhoods with a requirement for both proximate and frequent public transport (expand recommendation 44 to include Plan for accessible and frequent public transport);

(3) early delivery of the social infrastructure required to achieve 20-minute neighbourhoods (modify recommendation 34); and

(4) building new housing developments with sufficient density to make it possible to deliver all the social infrastructure included as ‘hallmarks of the 20-minute neighbourhoods (see unpublished data¹ in Table 1) (specific recommendation is required under 2.2 Create Thriving Urban Places).

Here we illustrate the importance of population density. Using thresholds for different types of social infrastructure provided by the Victorian Planning Authority, Jafari and Giles-Corti have modelled the densities required to achieve the 20-minute neighbourhood with the key destinations and amenities included in the Government’s 20-minute neighbourhood concept. Currently the average density across Melbourne are just over 14 dwellings per hectare.² For a new development with a population of (say) 60,000, building at 15 dwellings per hectare would require 28% more social infrastructure destinations to deliver the 20-minute neighbourhood than building at 35 dwellings per hectare. Moreover (not shown although data available on request) at this level of density, there would be considerable unused capacity for each of those amenities within 20-minutes of residents’ homes, hence it is quite probable they would never be built because there would be insufficient people to trigger them being provided.

¹ Jafari A, Giles-Corti B (2021) Optimising density to achieve 20-minute neighbourhoods, RMIT University, Melbourne.
Table 1: Optimising density to achieve 20-minute neighbourhoods – for a new development with a population of 60,000 (approximately two precincts)

<table>
<thead>
<tr>
<th>Destination name</th>
<th>Population required per destination (persons)</th>
<th>20 min access coverage target (% of population)</th>
<th>Number of destinations to open for different density levels (Dwelling Per Hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Level 1 - Neighbourhood level (up to 1,000 people)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Park</td>
<td>1000</td>
<td>95%</td>
<td>42</td>
</tr>
<tr>
<td>Health Clinic</td>
<td>1000</td>
<td>95%</td>
<td>42</td>
</tr>
<tr>
<td>Corner Store/Convenience Store/Local shop</td>
<td>1000</td>
<td>95%</td>
<td>42</td>
</tr>
<tr>
<td>Level 2 - Local level - up to 10,000 people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-purpose Community Centre</td>
<td>8000</td>
<td>80%</td>
<td>7</td>
</tr>
<tr>
<td>Government primary school</td>
<td>9000</td>
<td>80%</td>
<td>8</td>
</tr>
<tr>
<td>Government Secondary School</td>
<td>9000</td>
<td>80%</td>
<td>5</td>
</tr>
<tr>
<td>District park</td>
<td>9000</td>
<td>80%</td>
<td>4</td>
</tr>
<tr>
<td>District sports facility</td>
<td>9000</td>
<td>80%</td>
<td>8</td>
</tr>
<tr>
<td>Childcare centre</td>
<td>9000</td>
<td>80%</td>
<td>7</td>
</tr>
<tr>
<td>Larger supermarket</td>
<td>10000</td>
<td>80%</td>
<td>8</td>
</tr>
<tr>
<td>Level 3 - Major town level - 10-30,000 people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional supermarket</td>
<td>15000</td>
<td>70%</td>
<td>4</td>
</tr>
<tr>
<td>Maternal and Child Health Centre</td>
<td>16000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td>Occasional childcare centre</td>
<td>16000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td>Non-governmental Primary School</td>
<td>18000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td>Lower order indoor recreational centre</td>
<td>20000</td>
<td>70%</td>
<td>4</td>
</tr>
<tr>
<td>Neighbourhood house</td>
<td>20000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td>Lower order Tennis courts</td>
<td>25000</td>
<td>70%</td>
<td>4</td>
</tr>
<tr>
<td>Residential aged care</td>
<td>30000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td>Community health centre</td>
<td>30000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td>Community arts facility</td>
<td>30000</td>
<td>70%</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTAL NUMBER OF DESTINATIONS NEEDED</strong></td>
<td><strong>220</strong></td>
<td><strong>187</strong></td>
<td><strong>172</strong></td>
</tr>
</tbody>
</table>

Figure 1: Number of destinations to achieve a 20-minute neighbourhood - for a new development with a population of 60,000 (approximately two precincts)
2.2 Create thriving urban places

We strongly support recommendations 35-44. However, make the following recommendations:

35. **Support more homes in priority established places**

We support this recommendation, but would recommend in addition:

1. an emphasis on medium density (up to 7 stories) rather than high rise, with appropriate setbacks and human scale at the street level;
2. a revision of the noise provisions ensuring acoustic standards, rather than the minimum as is the current requirement; and that noise standards are published so that home owners and tenants alike are made aware of the rating of the home (rather than buyer beware), along with the energy rating of the building.

39. **Transform cycling in Melbourne**

This recommendation does not go far enough. We recommend that that there is an explicit requirement to provide safe separated from traffic and well-connected and inter-connected cycling infrastructure with 5km all activity centres and outer and middle LGA suburbs, as this will connect most of Melbourne and make cycling more viable across the city (see Figure 2).

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40. Improve walking and cycling data to better estimate travel impacts and benefits

We recommend a stronger collaboration between government and universities given the complexities of active transport behaviour and research currently underway in Universities, using agent based models.

To assist with developing agent based models of active transport, more time series are needed, along with detailed road network attributes, e.g. level of service. In addition, studies should include the socio-demographics of the cyclists and not just simple counters, as well as the types of bicycles (e.g, electric, road, hybrid) or scooters that are being used. A new approach to collecting sustainable transport data is required, rather than prioritising driving behaviour.

41. Reallocate road space to priority transport modes

Road space allocation can result in travel behaviour change and if done properly it can encourage local living and walking/cycling – therefore, there is a need for a mindset shift. Mode volumes should not be considered constant, they are variables that can be adjusted through proper road spacing allocation. We therefore recommend that the question to focus on should not be how to re-allocate road space to accommodate current transport volumes, but rather how to reallocate road space to promote active and sustainable travel behaviour.

2.3 Steer changes in travel behaviour

We strongly support the proposed recommendations related to steering changes in travel behaviour as thoughtful, visionary and essential. Although not related to infrastructure investments, complementary workplace policies could be included here in terms of working from home and starting and finishing times to better manage demand for public transport and to manage future congestion without the need for more road infrastructure. Moreover, in addition to providing safe cycling infrastructure, there needs to be great emphasis/or a requirement for end-use facilities that promote sustainable transportation modes.

The recommendation to abolish the free tram zone is strongly recommended: Apart from slowing down the tram system and increasing patronage in the free tram zone, this policy has decreased physical activity of Melburnians and hence is detrimental to health, by encouraging people to use trams. A more agile Myki system is needed to enable tourists to pay for tram fares within the city, without this needing to be a free tram.

Harness infrastructure for productivity and growth

3.1 Shape the transport for better access

This series of recommendations fails to explicitly include cycling infrastructure as a means of increasing access to employment. This is an important omission that should be addressed in the plan. A study by Alan Both and colleagues currently under review, found that although current rates of cycling in Melbourne are relatively low, cycling was found to have the most potential for achieving the 30-minute city. Modelling the current location of residents in relation to their employment, they found that 26.7% of workers in Melbourne could already reach their current workplace within 30-minutes by cycling if there was safe cycling infrastructure available. If there was a shift in cycling for commuting, and employment was redistributed to bring jobs closer to where people live, this could reduce commuting by private motor vehicle from 76.8 to 32% in Melbourne. The provision of safe cycling infrastructure within 5km of all activity centres and train stations, would be a major contributor to behaviour change and shifting to sustainable mobility should be central to the 30-year strategy.

Both et al. Achieving ‘active’ 30 minute cities: How feasible is it to reach work within 30 minutes using active transport modes? (Under review) J of Transport Geography
3.2 Plan for growth areas

68. Prioritise and oversee infrastructure delivery in growing communities

We strongly support this recommendation as both vital and needed in order to achieve the overall objectives of the plan i.e., to creating healthy and safe communities, to reduce disadvantage and to create a more sustainable, future proofed and resilient city.

However, we would recommend including explicit mention that ‘infrastructure’ includes social infrastructure because so often this is considered ‘soft’ infrastructure and less important than physical infrastructure. Social infrastructure (e.g., schools, communities centres etc (see Table 1 above)) is essential infrastructure, and it should not be subject to the vagaries of development whereby it is only triggered when enough residents move into an area. Like Europe, we need early delivery of social and transport infrastructure, even if in temporary locations from the outset.

We strongly recommend that the last sentence of the recommendation related to timing and sequencing be a separate important recommendation. It is critical.

However, we also note above, that the cost-effective pathway to the early delivery of social infrastructure is implementing the 20-minute neighbourhood concept and also committing to increasing densities to around 35 dwellings per hectare in new developments, and particularly around activity centres.

Develop Regional Victoria

In our study of the liveability of Australia’s 21 cities, we found that many regional cities had good ‘bones’ i.e., the inner core was walkable, but many lacked amenity (see Table 2, yet unpublished). The recommendations should include:

1. The creation of walkable communities with good quality cycling infrastructure to activity centres;
2. The provision of the social infrastructure combined by high quality digital infrastructure (as recommended) will will enable more Victorians to enjoy the benefits of living in regional communities, particularly given COVID has enabled more people to work from home.

Table 2: Liveability attributes of major regional cities in Victoria and Melbourne

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Albury-Wodonga</th>
<th>Ballarat</th>
<th>Bendigo</th>
<th>Geelong</th>
<th>Melbourne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Infrastructure/16</td>
<td>6/16</td>
<td>5/16</td>
<td>5/16</td>
<td>6/16</td>
<td>7/16</td>
</tr>
<tr>
<td>Public Transport access (proximate and frequent)</td>
<td>4%</td>
<td>43%</td>
<td>34%</td>
<td>38%</td>
<td>48%</td>
</tr>
<tr>
<td>Food environment</td>
<td>1648</td>
<td>1470</td>
<td>2154</td>
<td>1390</td>
<td>1173</td>
</tr>
<tr>
<td>Alcohol environment</td>
<td>1107</td>
<td>1067</td>
<td>1264</td>
<td>1002</td>
<td>929</td>
</tr>
</tbody>
</table>

5 See the Australian Urban Observatory for the score cards for these cities, including the maps of walkability. https://auo.org.au/measure/scorecards/
Respond to a changing climate

We strongly support the recommendation to require 7-star energy-rated new homes in 2022, increasing to 8 stars in 2025, however in our report on Mitigating and Adapting to Climate Change in Suburban Melbourne we also recommended:

1. this requirement specifically including high-density housing to achieve high standards of comfort, safety, equity, resilience and energy affordability; and
2. Ensuring housing design guidelines and standards address thermal performance, solar orientation, passive solar energy and improved summer performance.

The report’s recommendations in relation to water, provides insufficient emphasis on decentralised water systems; and the need for water-sensitive design. In relation to water, our report recommends:

3. Promoting deployment of decentralised water technologies at either precinct or even property scales, supported by public education campaigns to increase awareness of long-term water conservation and cost-saving benefits.
4. Planning and implementation of blue-green infrastructure requiring closer collaboration between agencies responsible for water management and landscape planning, across all levels of government because the implementation of other WSUD principles are hampered by institutional fragmentation and a lack of knowledge and skills across industry, government agencies and communities; and uncertainty about responsibilities for ongoing costs and maintenance of blue-green infrastructure in development precincts.
5. Building skills and knowledge on the benefits and applications of Water Sensitive Urban Design in State and local government and among regional and town planners, estate developers and the community.
6. A long-term and sustainable funding regime to underwrite decentralised water management solutions and infrastructures.

1.3 Embrace technological opportunities

Prepare for increasingly automated vehicle fleets

While the IV report on Autonomous Vehicles highlights the health, benefits associated with decreased injury, it is silent on the impacts on chronic disease. This could be significant if AVs increase vehicle kilometres travelled and

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6 Scheurer, J et al. (2020) Climate Change Mitigation and Adaptation in Suburban Melbourne, Centre for Urban Research, RMIT University.
sedentary behaviour. It is thought that AV’s could increase vehicle kilometres travelled and congestion, by increasing the amount of time vehicles spend on the road; the number of people driving (e.g., people previously unable to drive including older adults, people with disabilities, children); and the distances travelled as people work or sleep in their vehicles. Vehicles sent home while people are working, will essential double the burden of traffic on roads. The other well documented concern in the literature major concern is that AV’s may increase urban sprawl.

It is strongly recommended that:

1. The potential negative consequences of AVs be considered, alongside the land use planning guidance that with ‘maximise the benefits of autonomous vehicles.
2. That the State commit to a tight urban growth boundary;
3. That the impact of AVs platooning be assessed and managed in terms of the impact on pedestrians and cyclists.

1.5 Building a circular economy

While we support the recommendations in the IV report, given the rapid population growth Victoria has experienced in the past, and is likely to experience again post-COVID, we feel it does not go far enough in terms of suburban development. Construction and demolition waste accounts for around one third of all waste generated in the Australian economy, and for a similar percentage of waste going to landfill.7

Given that construction is such a large component of the Victorian economy, it is recommended that construction and demolition waste be specifically dealt with in the infrastructure plan. A whole of life-cycle approach to construction is the only way to account for the true environmental impact required to produce, transport and assemble construction materials, as well as the rate of renewal or replacement over the lifetime of a built structure. Developments in both new and established suburbs should also consider material impact and not ‘lock-in’ virgin material use. In relation to construction and demolition waste, our RMIT report recommends:

- Improving waste identification, source separation and collection, supported by waste logistics and waste processing facilities;
- Supporting procurement systems for high class recovery of waste to ensure second and third life of materials, underpinned by a framework to ensure quality and confidence in recycled construction and demolition materials.
- Promoting industry use of ‘track and trace’ in material use to develop and supporting ‘material banks’ that can be used for design and construction process innovations.
- Incorporating life cycle assessments of construction materials and waste management at construction sites into state-based regulations and the National Construction Code.
- Considering increases to landfill levies to reflect the true cost of waste and tax virgin material use.
- Developing training and skills to encourage sustainable management of construction waste.

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Omitted from the recommendation is any mention of the land use planning.

To protect the health and wellbeing of residents (Objective 2 of the Infrastructure Report), the Planning and Environment Act should be changed to include an objective to promote health. The continued development of potentially toxic waste storage and treatment plans within proximity to places of residence, has contributed to numerous examples of residents being exposed to toxic waste\(^8\) with potential tragic public safety and environmental consequences, as seen recently in Lebanon.\(^9\)

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\(^9\) [https://www.who.int/emergencies/funding/appeals/lebanon-explosion-2020](https://www.who.int/emergencies/funding/appeals/lebanon-explosion-2020)