Climate Action Moreland
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8 October 2018

Attention: Planning Manager, Melbourne Airport,
Locked Bag 16,
Tullamarine, 3043.

Submission on Melbourne Airport Master Plan 2018 Preliminary Draft

Executive Summary

The preliminary Draft Melbourne Airport Masterplan 2018 is predicated on a continuance of growth in air travel, and the aviation emissions that this engenders. The Masterplan fails to outline in any way the necessary links between growth in airport infrastructure facilitating growth in passenger numbers and flight numbers, and thus aviation emissions, which will increase the global climate change impact.

We note that while the Australia Pacific Airports (Melbourne) (APAM) Corporation has undertaken to participate in the TAKE2 Climate Change Pledge involving it's Collaboration with the Victorian Government and other businesses to support the Victorian Government's commitment to reach net zero emissions by 2050, it does not highlight that this does not apply to aviation emissions. Growth in the terminal and Runway Development Programs will foster a huge growth in aviation greenhouse gas emissions.

There is generally in this Masterplan a lack of assessment of what climate science informs us is required with aviation to meet the targets agreed to in the Paris Agreement.

This poses an enormous transitional regulatory risk, and risk of stranded assets if appropriate and substantial regulation is ever implemented on domestic and international aviation. This is a huge blind spot in the Melbourne Airport Master plan.

While few in Australia are so far calling for more stringent regulation of aviation emissions by capping passenger demand, this is nevertheless a scenario that might be implemented as the impacts of climate change escalate. This needs to be factored in as an import business risk as part of the master plan, no matter how unlikely this prospect is or repugnant that demand management may be for the business of the Melbourne Airport Corporation and the airline industry.

We contend that Melbourne Airport should also be exploring options for aviation travel demand management as part of the business planning, risk reduction and commitment to

reducing emissions to meet Victoria's legislated zero net emissions target and Australia's global commitments on climate targets.

Based upon our reading of the expert science our group has already called for a moratorium on general Melbourne airport infrastructure expansion as an initial step for demand management of aviation emissions.[1]

Our general arguments are contained in these sections:

- Regulation of Aviation Emissions
- Growth in Aviation Emissions
- What the science says about aviation emissions and meeting climate targets

This is followed by a detailed commentary on sections of the Masterplan.

We note that there was poor communication and engagement with the citizens of Moreland and further afield on the Airport Masterplan. As the airport serves Melbourne and Victoria, greater efforts should have been made to engage citizens further afield.

This submission was prepared on behalf of the members of Climate Action Moreland based on a decision at our September monthly meeting.

About Our Group

Climate Action Moreland is a grassroots climate action group that was started in 2008, with a strong local focus addressing climate issues in Moreland, and advocacy at local, state, federal and international levels for strong and rapid climate action.

Climate change is an important imperative for Moreland citizens:

- We know that climate change is already affecting us in Moreland with more frequent and intense heat events, more torrential rainfall events producing flash flooding.
- As a highly urbanised municipality, Moreland is has a strong urban heat island effect.

Climate Action Moreland recognizes climate change is an existential problem that needs to be addressed through declaration of a climate emergency and plans for rapid implementation of emissions reduction to zero carbon emissions and development of carbon drawdown techniques.

John Englart
Convenor
Climate Action Moreland

[1] Climate Action Moreland, Media Statement, 1 October 2018, https://climateactionmoreland.org/2018/10/01/call-for-moratorium-on-melbourne-airport-expansion/ Accessed 7 October 2018.

Regulation of Aviation emissions

Aviation emissions is a complex area to try to mitigate, complicated by the different allocation of responsibility for regulating these emissions between domestic and international flights.

Domestic aviation emissions are regulated by the Australian Government. Regulation to limit these emissions has been limited to some technical efficiency and flightpath and service improvements, and very limited biofuels testing. The efficiency gains are nowhere near the level to match the growth in flights and greenhouse gas emissions of aviation.

"The growth in airline traffic will contribute to the growth of carbon dioxide (CO 2) emissions despite improvements in aircraft technology and operations, more efficient use of airspace, and the increasing uptake of sustainable alternative fuels for aviation. The Australian Government Department of the Environment and Energy has estimated that CO 2 emissions from domestic aviation are projected to rise steadily at an average of 2.2 per cent per annum out to 2034-35 4 . In the same period, CO 2 emissions from international civil aviation are projected to grow on average by 3 per cent per annum. In 2005, total CO 2 emissions from the combustion of aviation fuels purchased in Australia were 13.6 million tonnes (Mt); in 2015 this figure increased to 20 Mt".[2]

International aviation emissions are nominally regulated by the International Civil Aviation Organisation. (ICAO). The ICAO is formulating a carbon offsets scheme called CORSIA that will be voluntarily introduced from 2021 for emissions that exceed 2020 levels only.

One of the issues is the level of taxation of aviation fuel, which gives aviation a cost advantage over ground transportation taxation of fuels and regulation of transport.

Domestic aviation fuel is only taxed at $0.03556 per litre.[3]

International aviation is excluded from any taxes or charges arising from a prohibition on countries imposing a fuel tax or VAT on international flights from the outdated 1944 Civil Aviation Chicago convention. The ICAO has failed to review and update this[4]. International flying is thus kept artificially cheap, while trains and cars become more expensive.

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[2] Australian Department of Infrastructure, September 2017, Managing the Carbon Footprint of Australian Aviation - Update August 2017 https://infrastructure.gov.au/aviation/environmental/emissions/files/Managing-the-Carbon-Footprint-of-Australian-Aviation.pdf Accessed 7 October 2018

[3] See Australian taxation Office Excise rates for fuel. https://www.ato.gov.au/business/excise-and-excise-equivalent-goods/fuel-excise/excise-rates-for-fuel/

[4] ICAO Chicago Convention https://www.icao.int/publications/Pages/doc7300.aspx Accessed 7 October 2018

Nominally airports are not responsible for aviation emissions, yet the expansion of facilities, whether new or expanded runways or new terminals, leads directly to and induces increased passenger demand, increased flights and increased aviation emissions.

Growth in Aviation Emissions

The aviation sector is the world's fastest growing greenhouse gas emitter and one of the most polluting sectors. By 2050, carbon emissions will quadruple, according to a 2009 ICAO information paper.[5]

Hundreds of airports are being built or extended. While only 7 % of global population ever sat in an airplane, others are bearing the costs: Native communities losing their livelihood and the biodiversity, locals affected from noise and health problems, and people in the Global South already suffering from climate change.

According to Andrew Macintosh and Lailey Wallace (ANU Centre for Climate Law and Policy) in the 2008 working paper "International aviation emissions to 2025: Can emissions be stabilised without restricting demand?"[6]

> *The Intergovernmental Panel on Climate Change (IPCC) has estimated that the total radiative forcing associated with anthropogenic agents in 2005 was 1.6 W/m 2 (0.6 – 2.4 W/m 2). This suggests aviation's contribution excluding cirrus cloud effects is in the order of three per cent. When cirrus cloud effects are included, aviation's contribution could be as high as 6 – 8 per cent. Hence, while aviation is not currently one of the main drivers of global warming, its effects are significant and should not be overlooked in policy processes.*

The authors conclude that

> ***"Stabilising international aviation emissions at levels consistent with risk averse climate targets without restricting demand will be extremely difficult."***

[5] ICAO Information Paper, 2008, GLOBAL AVIATION CO2 EMISSIONS PROJECTIONS TO 2050 https://www.icao.int/environmental-protection/GIACC/Giacc-4/Giacc4_ip01_en.pdf Accessed 7 October 2018

[6] Macintosh and Wallace, 2008, International aviation emissions to 2025: Can emissions be stabilised without restricting demand?" Energy Policy Volume 37, Issue 1, January 2009 https://www.sciencedirect.com/science/article/pii/S0301421508004217 Accessed 7 October 2018

What the science says on aviation emissions and meeting climate targets

A 2016 study highlighted the technological myths and hype that surround the ability to reduce aviation emissions through efficiency gains and technological development.

"The way in which new technologies are presented constitutes a 'myth', a form of propaganda which denies the truth that progress in climate policy for aviation has stalled. The use of these technology myths by industry and government relieves anxiety that nothing is being done, by pointing to future 'miracle' solutions, which in reality are unfeasible." said Dr Scott Cohen, of the University of Surrey.[7]

The team analysed how new aviation technology such as solar flight has been presented by industry as key to sustainable flight, while proving it would be unachievable for large scale commercial flights.

Paul Peeters, Associate Professor Sustainable Transport and Tourism, NHTV Breda:

> *"We see a definite pattern when it comes to the hyping of these technologies. Take solar or electric flight. Through the media, the industry successfully presented these technologies as major breakthroughs that would have beneficial implications for future, zero-emission flight. In reality this is rhetoric that takes headlines away from the fact that emissions policy is failing, and continually points to a 'better future' just around the corner."*
>
> *"While these inventions are fascinating from a research perspective, they won't act as a panacea for the harmful, climate damaging emissions that the aviation industry is increasingly releasing into our atmosphere. Industry will always wish to present an optimistic view of their role in this issue, but our research has also shown that some politicians are complicit in propagating these myths and need to stop relying on rhetoric and start referring to facts."*

Professor Alice Bows-Larkin has been publishing research in the area of aviation and shipping emissions for several years. Her 2014 Synthesis article called ‘All adrift: aviation, shipping, and climate change policy’ outlines the problem and some difficult solutions.[8]

Bows-Larkin concludes that “the more simply structured aviation sector is pinning too much hope on emissions trading to deliver CO 2 cuts in line with 2C. Instead, the solution remains controversial and unpopular – avoiding 2C requires demand management.”

On demand management of aviation Bows Larkin puts forward the typical growth rates ‘allowable’ within the constraints of a 2C climate target. We need to also remember we are

[7] University of Surrey. "New research uncovers the ‘myths’ behind technological solutions to aviation’s climate change crisis." ScienceDaily. ScienceDaily, 4 March 2016. <www.sciencedaily.com/releases/2016/03/160304092241.htm>

[8] Alice Bows-Larkin (2015) All adrift: aviation, shipping, and climate change policy, Climate Policy, 15:6, 681-702, DOI: 10.1080/14693062.2014.965125 Accessed 7 October 2018

actually aiming for a more ambituos target: striving to achieve the 1.5C temperature limit target.

> ***"Assuming an optimistic 2% annual fuel efficiency improvement … passenger-km growth rates would need to be cut to zero from 2020, with a 4% p.a. reduction from 2025."***

According to Bows Larkin the C + 5 scenario ***"requires zero growth to 2025, then reductions of 6% p.a. from 2033."***

Bows Larkin raises the difficulty of the airline industry, private airport corporations and governments discussing the need for aviation demand management:

> *"Constraining demand for flying is unpopular, with little reference to it as a viable policy option in industry and government literature. Nevertheless, it can be argued that a gradual reduction from the typical 3% p.a. growth seen since 1990, to zero by 2020 to 2025, is no more challenging to achieve than a large-scale and rapid fleet-wide role-out of new technologies, or emissions trading implemented globally and commensurate with 2C. A personal carbon quota scheme for CO 2 that includes international flights is one mechanism that could lead to such a radical change in levels of per capita flying (Fawcett, 2010).*
> *Administratively, this type of policy could build upon existing credit-card-type technology (Starkey & Anderson, 2005). It is difficult to imagine how a policy could physically drive a rapid technological overhaul of the global aircraft fleet in a similar timeframe. It is highly desirable therefore that there is more research analysing where absolute cuts in passenger-km through the provision of alternatives such as virtual communications or long-distance, low-carbon rail travel, to add to existing literature (e.g. Coroama, Hilty, & Birtel, 2012; Guldbrandsson & Malmodin, 2010).*

Her conclusions for aviation:

> *In aviation, the limit to technical and operational change has led the industry towards a preference to use a global emissions trading scheme to provide net emission cuts. In other words, the sector expects CO 2 savings will generally be made in other sectors of the economy to enable aviation-related CO 2 to grow or be cut by less. Yet, even with trading, a target of a 50% net CO 2 cut is not sufficient to meet the 2C goal. Ironically, by comparing aviation with shipping, it becomes clear that if there were mitigation options available to the air transport sector, its relatively simple institutional set-up, with its small number of manufacturers, fewer markets and actors, as well as a lower number of major national players, would make incentivizing change practical. Instead, with emissions trading disconnected from the 2C challenge, demand-management and biofuels offer the only feasible ways of cutting CO 2 in the timescale compatible with the available CO 2 budget. Yet, both raise interesting ethical and moral issues. Should aviation, which in a global context continues to be dominated by relatively affluent leisure passengers (Williams, 2007), take priority over other*

sectors for the use of sustainable biofuels in preference to less popular policies aiming to curb or even cut growth rates?

Bows-Larkin final conclusion in her study is on the need to oppose airport expansion:

> *Ultimately, an uncomfortable and familiar conclusion for aviation remains:* ***a moratorium on airport expansion at least in wealthy nations is one of the few options available to dampen growth rates within a timeframe befitting of the 2C target.***

Detailed review of Airport Masterplan

We note in the 'Melbourne Airport today – a snapshot' on page xi under Environment Strategy the following statement:

> *Melbourne Airport will work with stakeholders to identify, evaluate and implement the use of sustainability standards and frameworks for new developments, responding to the global challenge of climate change, and continuing its commitment to the Airport Carbon Accreditation scheme.*

We find it difficult to reconcile the response to the global challenge of climate change with the complete absence of mention of increasing aviation greenhouse gas emissions and aviation climate impact. We find this statement at complete odds with the runway development program seen as critical for meeting forecast passenger growth, while failing to provide any assessment of contribution that new airport infrastructure will make to grow aviation emissions.

Airside capacity (5.2.3 Current airside capacity)
will not be reached until 2020-2022. Melbourne Airport advocacy for new runway and taxiway infrastructure is "to accommodate further growth while providing a level of service in line with industry expectations" without regard to the indirect climate impact this will generate.

(5.4 Existing ground transport)
That airport based employees form a substantial component of the total transport demand. With "87 percent of the total airport workforce travels to the airport for work on a typical weekday, with 88 percent of airport-based employees driving to work" we think there is capacity to increase public transport and active transport use by the airport and associated business workforce, as well as by airline passengers.

(5.4.5 Active transport)
Although Melbourne Airport is located close to bicycle paths that are part of Melbourne's Principal Bicycle Network, there are currently no continuous bicycle routes from surrounding suburbs that directly connect to the airport. Effort should be put into creating an airport cycling network and filling these gaps to encourage both workforce use and passenger (tourist) use.

(5.6 Cultural heritage and environmental context)
That "Significant growth is forecast for the airport, and this growth is set to occur within a context of evolving environmental and carbon regulation, and a changing climate. The possible impacts of this uncertain future on the airport's cultural and environmental attributes are discussed in section 5.6.2" . This section fails to consider the risks of regulatory action in limiting aviation demand (to the levels that climate science experts say is needed)

Noted with alarm (5.6.2.1 Growth of operations and demand)

it is articulated that “The population of Melbourne is growing rapidly and, with it, demand for air travel is also growing.”

“By 2038 Melbourne Airport is expected to cater for more than 65 million passengers per year (up from 34 million in FY16). Over this same period, aircraft movements are expected to increase from 238,000 to 384,000 movements per year and freight throughput is expected to almost double.”

We note your recognition of some of the risks and the actions you are taking “investing in renewable energy, energy efficiency, water efficiency, improved waste management and sustainable procurement. By implementing these actions, Melbourne Airport will continually improve the resource efficiency of our operations and minimise our overall ecological footprint.”

While greening your infrastructure and carbon footprint is essential there is no discussion of what increasing the airport infrastructure for increased aviation movements will do in terms of increasing aviation emissions, especially from the “Runway Development Program (RDP), which will involve a third runway and extensions to the existing east–west runway.”

(5.6.2.3 Evolving regulation and expectations)
That you track the environmental management expectations of a wide variety of groups, “These expectations will continue as our stakeholders become increasingly interested in the broader, long-term risks we manage. In particular, this interest relates to the airport’s contribution to the sustainability of Melbourne (and Victoria) as a whole, and how the airport will manage risks and opportunities related to climate change.”

Yet the Masterplan has in intense silence on efforts in advocacy for better regulation, let alone managing aviation emissions growth, caused by expansion of airport infrastucture, particularly new runways and new terminals.

(5.6.2.4 Climate change) discussion of physical and transitional risks,
We think there is substantial transitional risks of regulation being ignored. If “Melbourne Airport will work to build its resilience to a range of possible future scenarios”, it needs to assess the climate science on aviation emissions, climate targets, and possible regulatory actions that might be taken. These could potentially heavily affect demand for flying and the growth business model of the airport.

The regulatory environment has the potential to change quickly when the impacts of climate change escalate and the impact of aviation emissions is more widely known.
“The airport’s current enterprise risk management system includes transition risks related to state and federal carbon policies and energy market volatility. Conversely, some of these factors also represent opportunities to drive projects in renewable energy and resource efficiency.”

But there is still no mention of the possibility of demand management as a regulatory tool.

The Masterplan states that “the resilience of Melbourne Airport contributes directly to the resilience of Victoria as a whole. Therefore, in the interests of future-proofing its operations and environmental performance in the face of this uncertainty, Melbourne Airport will work to build its resilience to a range of possible future scenarios.”

Does that include scenarios working to limit aviation emissions? That is the huge elephant that never gets mentioned in this masterplan.

(6.0 Melbourne Airport in context) (6.1.1 Passenger numbers) (6.1.3 Drivers of aviation growth)
The huge increase and growth in passengers through Melbourne airport is a reflection that aviation and flying has become a normalised activity, with a failure of the industry to include the environmental impacts of air travel in ticket pricing.

While “Growth in passenger numbers was driven by a strong increase in international passengers, which reached 9.9 million for the year, an increase of over eight percent on the previous year. International passenger volumes have more than doubled over the past decade from 4.5 million in 2006–07. International travel has become increasingly affordable relative to domestic travel for Australians.”

This is one of the impacts of zero fuel excise on international aviation, and a lack of regulation of pricing to include environmental impacts of air travel.

(6.1.4 Air freight) increase in air freight forecast
and its use to import/export seasonal produce and other goods. The environmental costs of aviation emissions fail to be adequately reflected in goods shipped by air. While we appreciate some goods need to be shipped quickly to market, much air freight could be adequately shipped by surface transport.

(6.2 Economic and social significance of the airport) (6.2.1.1 Economic activity) (6.2.1.2 Employment)
We appreciate the economic activity of businesses operating within the airport precinct contributed $7 billion to the Victorian economy. The airport is a significant employment hub with about 20,600 full-time equivalent (FTE) jobs, and many thousands of indirect jobs in the region..

Any regulatory action to limit aviation emissions needs to be phased in to ensure economic activity and employment remains stable. We think there is a problem with Melbourne Airport being a driver of economic growth across Victoria and the rest of Australia, while also allowing its infrastructure expansion to increase aviation emissions exacerbating climate change and substantial costs to the economy from climate related extreme weather events.

Increase in employment opportunities should not come at the expense of increasing the damage to our climate. As Sharan Burrow, General Secretary of the ICTU, said in Paris at the UN climate Change Conference in 2015: "There are no jobs on a dead planet"[9].

(6.2.1.3 Tourism) and its contribution to the Victorian economy

"Tourism facilitated by Melbourne Airport is expected to continue to grow. By 2026–27 the contribution of tourism to the economy is projected to almost double, supporting an additional 40,000 Victorian jobs.

One should also note the comments by Martin Young, Southern Cross University; Francis Markham, Australian National University; James Higham, and John Jenkins, Southern Cross University in the article on tourism and aviation at The Conversation website in January 2017 [10] :

> *"If we abandoned all tourist flights, the economy would be A$14.4 billion better off. International visitors spent A$38.1 billion in Australia in 2015-16. But, Australians travelling overseas spent far more – A$52.4 billion – in the same period."*
>
> *"International tourism, both in and outbound, would continue under a no–aviation scenario. As an island nation we will become reliant on ships. Travel by cruise ship is already booming. While cruise ships are currently highly polluting, their conversion to non-fossil-fuel energy, in contrast to the plane, is more achievable."*

(6.3.1 Australian Infrastructure Plan) the inclusion of:
Preserving the corridor for East Coast High Speed Rail (0–5 years) and Melbourne Airport to CBD public transport capacity (5–10 years).

The Andrews State Government has since announced the Suburban loop rail line as part of the Melbourne Airport to CBD rail link. This rail project makes enormous sense as an orbital rail line linking economic and innovation hubs in Melbourne, including the Melbourne airport precinct. It would provide a valuable public transport link for people who work at the airport and for passengers.

East Coast High Speed Rail corridor is also significant.[11] This needs investment by state and Federal governments to provide competition to the Melbourne to Sydney flight route, listed as the second busiest domestic flight route globally.

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[9] Youtube, 8 December, 2015, Sharan Burrow from ICTU speaking to civil society at #COP21: No jobs on a dead planet https://www.youtube.com/watch?v=RPrtbLHfeNY

[10] The Conversation, January 12, 2017 – Life in a post-flying Australia, and why it might actually be ok https://theconversation.com/life-in-a-post-flying-australia-and-why-it-might-actually-be-ok-70388

[11] Beyond Zero Emissions, 2014, High Speed Rail Report (2014) http://bze.org.au/high-speed-rail-plan/

The development of High Speed Rail affecting the business risk and growth forecasts has not been adequately assessed as part of the Masterplan.

(7.0 Airport growth forecasts) (7.1 Aviation forecasting context)

There are many factors and trends that may impact aviation forecasting such as “changes in security requirements, oil prices and technology enhancements.”

Competition from any high speed rail project would likely impact domestic aviation market and growth forecasts. As the climate crisis worsens and aviation emissions remain unmitigated, it is likely that passengers may change their choice of travel destination, airline and airport of departure and arrival and transport mode.

Melbourne Airport needs to be aware of a growing consumer uneasiness with regards to the hyperbole of flying and increasing climate change impacts. See the recent publication of *The Elephant in the Sky* by Mark Carter.[12]

(7.2 Passengers) the unsustainable growth in passenger numbers, an indicator of growth in emissions and incompatible with climate targets.
“Total passenger movements are forecast to grow from 35.2 million in 2016–17 to 67.8 million in 2037–38 (Figure 7-1). The increase of 32.6 million passengers represents overall growth of 92 percent and an average annual growth rate of 3.2 percent. Growth in passenger numbers is forecast to be slightly stronger in the medium term, growing at an average of 3.3 percent a year out to 2022–23 to a total of 42.7 million passengers.

“Longer term growth from 2022–23 to 2037–38 is forecast to be slightly slower, at 3.1 percent per annum.

“The domestic market is expected to account for the majority (63 percent) of overall passenger growth, but the international market is expected to grow more quickly than the domestic market (3.9 percent per annum versus 2.9 percent per annum).

“The number of seats per aircraft in both domestic and international markets continues to grow due to revised seating layouts and larger-capacity aircraft. This trend results in a lower growth rate for aircraft movements compared with the domestic and international passenger growth rates.”

(7.2.1 International passengers) the unsustainable growth in international aviation incompatible with climate targets
“International passengers are forecast to more than double by 2038, from almost 10 million in 2016–17 to more than 22 million. This reflects an average rate of growth of 3.9 percent, with more than 12 million extra international passengers forecast to be using the airport by 2037–38.

[12] Mark Carter, September 2018, The Elephant in the Sky.
http://markmaking.com.au/mmwp3/wp-content/uploads/2018/09/The-elephant-in-the-sky_online_s.pdf

“Future growth in international passenger numbers is expected to be driven by increases in airline competition and developments in aircraft technology that reduce the cost of international travel, and the continued economic development of Asia.

“Opportunities for capacity growth in new services to North Asia and the Americas are expected to be particularly strong. There is scope for continued growth to leisure destinations, primarily in Asia, while strong growth from China is expected to continue as its economy continues to develop.”

(7.4 Aircraft movements) increase in aircraft movements, an indicator for increased aviation emissions

“Aircraft movements at Melbourne Airport are forecast to grow from 239,300 in 2016–17 to more than 384,000 in 2037–38 (Figure 7-4).”

(7.5 Vehicle traffic) the need for investment in public transport or other travel demand measures

to ameliorate projected growth in up to 240,000 vehicle trips per day by 2038

(8.0 Development concept plans) (8.1.1 Runway Development Program)

We note that “Operational efficiencies have deferred the requirement for an additional runway by over ten years.” The lack of assessment of the growth in aviation emissions and aviation climate impact and the need to stay below 2C temperature target has not been adequately taken into account for assessing the need of the Runway Development Plan (RDP).

(8.3 Long Term Development Concept Plan)

We note the development footprint and the long-term concept plan for the four-runway configuration on the site, and argue that such a configuration and development needs to be carefully assessed and brought into line with global climate targets and aviation climate impacts. This is what should drive whether there is a need for expansion of runways and whether such development is in keeping with priorities to avert exceeding climate targets.

Long term concept plan is still important with the evolution of future low emissions aircraft in the long term may be developed. Technologies to enable short haul commercial zero emissions or hybrid technology low emissions flight might be possible by mid-century or later. There should be a moratorium on runway development until that time that large scale commercial low emissions or zero emissions aviation is achieved.

(9.0 Aircraft noise and flight paths) associated with third runway development

We note the main statutory planning tool currently safeguarding Melbourne Airport is the Melbourne Airport Environs Overlay (MAEO), which is based on the airport’s 2003 Master Plan ANEF noise contours.

Existing suburbs of Gladstone Park, Westmeadows, Broadmeadows and others will be directly under the proposed new flight path and will be severely impacted by aircraft noise. We note that the existing 2 runways have a green wedge located under the flight path with no dwellings for a considerable distance from the end of each runway to prevent residents being exposed to excessive noise. The proposed third runway will fly directly over existing homes, schools, businesses, aged care and sporting facilities. The Runway Development Plan and the proposed third runway is inconsistent with local suburban development that has been allowed to occurr.

Thousands of residents live, work and play under the proposed third runway. Every dwelling located under the new flightpaths were legally built and outside of the ANEF noise contours that required sound insulation that is required under the Australian building code today.

If runway development occurs as planned, this will impose detrimental effects on local residents, including disruption to sleep, and impinging on outdoor activities in backyards and on sporting fields from the thousands of flights directly overhead each and every week.

If additional runways proceed, then a mandatory night time curfew between 9pm and 7am should be imposed. A curfew would ameliorate to some extent the health impacts to residents from the worst aspect associated with aircraft flying over densely populated areas.

The burden of a 24/7 airport should not be borne by the local community, but any additional costs in modifying buildings or health impacts from increase in noise should be worn by the Airport.

Melbourne Airport has consistently failed to object to inappropriate urban residential development under existing flightpaths.Lack of planning and the current rate of residential growth around the airport should provide another reason for the necessity to cap the demand for aviation through Melbourne airport.

(10.0 Airport Land Use Plan) Planning for long-term aviation growth (10.3.2 Airport Expansion Precinct)

While we appreciate that some conservation land has been set aside around the precinct perimeter, we believe the imperatives of climate change and limiting aviation emissions should restrict the airport's future expansion, including future runways, taxiways and terminal and aviation support facilities.

We appreciate that some facilities may need to be upgraded for existing air traffic management and air safety such as new air traffic control tower and Hot Fire Training Ground, but the imperative here is increased safety and efficiency of the operation of the airport, not to drive growth in high emissions aviation.

The creek environments in the airport precinct and on the boundaries are particularly important to safeguard from contamination that has the potential to affect a much wider area through the waterway systems. This includes land adjacent to Deep Creek and the Maribyrnong River, which forms the western boundary of the precinct, and Moonee Ponds Creek, which forms the northeast boundary. The Grey Box Woodland is situated in the north of the precinct, and Arundel Creek traverses through the precinct from north to south.

There is particular concern that Melbourne Airport has allowed PFAS contamination of local waterways that has impacted local market gardeners and users of local river systems. This has imposed extra costs on these people and businesses.[13]

(10.3.5 Landside Business Precinct) future development
The Landside Business Precinct is situated to the south of the Airside Operations and Landside Main Precincts. This development should include good public transport, cycling and walking infrastructure.

(10.5.1 Environmental Significance Overlay)
We note the Environmental Significance Overlay applies to: Deep Creek, Maribyrnong River, Moonee Ponds Creek, Melbourne Airport Golf Course, Grey Box Woodland.

(11.0 Airside Development Plan)
We note that “development of Runways come at significant cost and are primary enablers of the airport’s overall capacity growth” and that “Melbourne Airport’s airside capacity is defined by its overall runway capacity.”

The imperative to limit aviation emissions should be a major driver in limiting runway development and airside capacity to cap forecast growth in aviation demand at Melbourne airport.

(11.2.1 Runway Development Program)
We note that “Operational efficiencies have deferred the requirement for an additional runway by over ten years.” The need to reign in aviation emissions should provide reasons to defer well into the future any development of a parallel east-west runway system as part of the 2013 Master Plan.

Aviation demand in the short term needs to be capped. We note that “A parallel east-west runway system will provide at least 25 percent more runway capacity than an additional north-south runway”. No third runway should be developed until commercial low emissions aviation industry is developed that can utilise this increased runway capacity.

(11.2.1.2 Options Assessment)
We note that “in the Melbourne Basin there are three other airports that could potentially be expanded to meet the future growth requirements, Essendon Fields Airport, Moorabbin Airport and Avalon Airport.”

Our objection to increased airport development, based on increasing aviation emissions, applies equally to future development at all these other airports, or any new proposed airport in the Melbourne region.

[13] The Age, 1 October, 2018. Airport's toxic runoff leaves farmers unable to use water they bought https://www.theage.com.au/national/victoria/airport-s-toxic-runoff-leaves-farmers-unable-to-use-water-they-bought-20180927-p506c7.html Accessed 7 October, 2018

(11.2.1.4 Benefits), while general climate impact costs ignored
We question the growth requirements for Melbourne Airport and the national aviation network, in the light of the growth in aviation emissions and need to reduce emissions across all sectors to meet the Paris Agreement 2 degree C climate target.

The costs of Air travel needs to include the external environmental costs which is not being factored in to airline ticket prices. Air travel demand needs to be restricted, but also applied in an equitable way to ensure that those travel infrequently are still able to use aviation.

The Melbourne Airport RDP, while based on a combined assessment of demand, capacity, delay, delivery timeframes and the cost benefit analysis, ignores the global climate imperative.

While the benefits of the RDP of an additional 17.7 million passengers to use the airport every year by 2043, and an additional 51,200 jobs in Victoria and an additional $15.9 billion per annum to Gross State Product over this period, the cost to the economy of climate impacts generated by aviation emissions that airport growth has enabled have been ignored. These will counteract and likely exceed the value of the benefits being touted as part of airport expansion and the runway development program.

(11.6 Long-term four-runway airside configuration)
We note and oppose the “four-runway configuration, with parallel east–west and parallel north–south runways, is currently foreseen to be implemented beyond 2040 (based on current forecasts) to support the long-term capacity of Melbourne Airport.

While we note the Airport’s openness to change in coming decades through operating procedures, navigational technology and improvements to aircraft technology and efficiency, there appears to be a lack of assessment of the need to cap and curtail high emissions aviation transport until zero or low emissions alternatives are delivered, although this is likely to be long into the future, past 2050.

Future Master Plans should reassess and report on runway capacity, runway geometry and the long-term capacity of the current and future runway configurations planned for the airport, fully taking into account the need to limit and reduce aviation emissions.

(12.0 Terminals and Aviation Development Plan)
Airside capacity with runway development should remains limited for the forseeable future. We think upgrade of both International and Domestic terminals should be also limited, or restricted to improve efficiency, safety and security, rather than to enable passenger growth.

(12.5 General aviation facilities)

We note that in 2018 the Melbourne Aviation Precinct will begin operating a VIP private jet base, that will service the private jet market at Melbourne Airport. This increases aviation

emissions at a much more intense scale than public aviation. It also enhances the inequity of airline travel. We oppose the provision of this facility.

(13.0 Non-Aviation Development Plan)
We support non-aviation development that enhances existing operation of the airport and it's future as part of Melbourne within the restriction of limiting aviation demand and growth.

Non-aviation development should leverage of innovation and smarter ways of working, while encouraging developments that achieve the highest standards in sustainable environmental development, safety and security

(14.0 Ground Transport Plan)
We note the commitments to **(14.2.4 Public transport)**, especially a shift towards mass transit. We support the proposed Airport Rail Link to provide reliable travel times to existing public transport users, encourage a mode shift as part of the Suburban rail loop project that would connect the Airport precinct with other major innovation and employment hubs around Melbourne.

Noting that almost two-thirds of airport employees live within 15 kilometres of the airport and that active transport could provide a viable healthy transport alternative **(14.2.5 Active transport)** cycling path and improving footpaths needs to be fast tracked.

End of trip facilities and cycling paths as part of Progressive expansion of the internal road network is essential as part of further expanding the at-grade cycling infrastructure. Improving the connectivity of the internal path network to external walking and cycling networks is vital.

(14.5.5 Active transport) with the "construction of the Melbourne Airport Link and Bulla Bypass,
an extension of the off-road bicycle path network is proposed. This will improve safety for cyclists on the Sunbury Road corridor and provide a better connection to the wider metropolitan trail and cycle path network." This work should be fast-tracked to support wider zero emissions transport options.

(14.6 Market disruptors and technological innovation)
Market disruptions will continue to occur. The need to reduce aviation emissions is perhaps the largest potential market disruptor that this Masterplan has failed to adequately consider.

We note the Airport's consideration of increasing energy-vehicle disruption that is growing "As awareness about emissions and fuel costs has grown, the past five years has also seen a significant rise in the number of vehicles powered from non-traditional energy sources. This may provide an opportunity to incorporate recharging facilities for vehicles powered through non-traditional means as part of future car park upgrades."

Also we note the airport's consideration of the disruption brought about by the digital revolution and artificial intelligence with "In the longer term an autonomous vehicle network

in which vehicles are programmed to return empty to the passenger's residential address, and/or in which there is a network of autonomous vehicles providing on-demand trips, could result in a significant change in passenger (and employee) trip patterns."

All the more strange that the airport consistently fails to consider the disruption imposed by the need to limit aviation demand and aviation growth to avoid dangerous climate change impacts of exceeding globally agreed climate targets.

(15.0 Utilities Infrastructure Development Plan)
We note the airport business is pushing a string growth model, which is unsustainable given climate constraints.

Investing significantly to increase the available capacity of utilities infrastructure to support projected growth could result in gold plating the infrastructure and stranded assets.

In terms of Resilience and Mitigating the impacts of impermeable surfaces across the airport to reduce the heat island effect and manage stormwater run-off, the most effective method is not to expand runways further.

The Airport should always be assessing supply contracts to ensure a secure and reliable enhancement of procurement contracts that match strong sustainability criteria that reduce the airport's carbon footprint.

We note the Airport is required to "Plan for future changes in requirements arising from airport developments, passenger growth, regulatory shifts, volatility of global commodity prices, change in community expectations and the likely impacts of climate change", but appears to neglect its role in increasing aviation emissions and aviation climate impact.

We note the airport will "Respond to climate change through planning for an increase in maintenance costs, greater and last-minute disruption to services, greater transmission losses, and increases in cooling loads and in heat-related health risks for infrastructure personnel. To mitigate these risks, the Infrastructure Development Plan will aim to create effective heat sinks as well as enhance, where possible, infrastructure insulation."

(15.2 Energy network)
We note the airport remains committed to reducing energy Consumption, through energy efficiency measures such LED lighting, zoning and passive heating and cooling measures and to prioritising clean or renewable energy sources. The airport should aim to be 100 percent powered by renewables, with some on-site generation and through purchase of renewable energy via power purchasing agreement.

(15.2.3 Gas supply network)
We note that the airport uses a tri-generation gas system. Gas is also a fossil fuel, although cleaner than coal. It generates fugitive emissions at all points along the supply chain. The airport seeks to safeguard its gas supply network in response to growing gas demand and global volatility in availability and pricing. It would be better for a transition plan to reduce and

phase out gas usage as part of the airport which would also avoid volatility in this energy sphere and lower energy emissions.

(16.0 Environment Strategy)
This Environment Strategy totally ignores aviation emissions, and supports growth of the airport which will increase those aviation emissions. The strategy does not address the global increase in aviation emissions, the climate targets, and the imperative to limit emissions to meet those targets.

(16.2.1.2 Growth of operations and demand)
It is highlighted that the population of Melbourne is growing rapidly, but it is not a necessity that demand for air travel should also growing.

The growth dynamic embedded within the airline industry and the private Melbourne Airport Corporation, supported by both the Victorian and Federal Governments, will lead directly to a massive increase in flights and an increase in aviation carbon emissions and climate impact.

(16.2.1.4 Evolving regulation and expectations)
While the Environment Strategy notes the compliance environment will continue to evolve, there is no risk assessment of what serious demand management of aviation would do to the airports business growth model, and how the airport could operate within a far more restrictive compliance environment focussed on limiting aviation emissions.

We note in particular: “Changes to the regulatory environment are an inevitable result of continuous improvement in regulation as new science is integrated and community expectations shift. For example, the body of knowledge around the health risks of diesel exhaust particulates or PFAS (per- and poly-fluoroalkyl substances found in firefighting foams) has improved in recent years and this has been reflected in regulatory shifts.”

Why then does the Environmental Strategy ignore the issue of increasing aviation emissions? And the possibility that aviation may be severely constrained in the future?

(16.2.1.5 Climate change) as part of the Environment Strategy
We note that Melbourne airport has taken into consideration that Climate change will amplify a number of risks and opportunities and that Melbourne Airport will work to build its resilience to a range of possible future scenarios.

As outlined, climate risks are both of a physical and transitional nature. While physical risks appear to be taken into account some of the transitional risks appear to be substantially ignored. As outlined, these risks “ have the potential to affect access to capital, reputation, investor concerns and regulatory pressure on the carbon-intensive aviation sector.”

Melbourne Airport needs to incorporate high level risks on climate targets and how Australian and Victorian Regulatory environments align with global climate targets and Australian commitments to meeting those targets. This should be part of building the resilience of Melbourne Airport and its contribution to the resilience of Victoria as a

whole.

Melbourne Airport needs to include aviation emissions growth and how to limit aviation emissions as part of possible future scenarios, through the development of a Climate Change Adaptation and Mitigation Framework.

(16.2.4 Risks and opportunities)
We note the Airport's environment risk register. The Airport and aviation has a pivotal role to play in decarbonisation strategies, but only if appropriate limits are placed on growth to control emissions. If other sectors such as energy or agriculture decarbonise much slower, the imperative to limit aviation demand may be much stronger. This is a high near term risk for the airport and should be included in the development of the Climate Change Adaptation and Mitigation Framework.

We note the importance of Environmental targets for Melbourne Airport in Sustainability in planning and design, water use, and Energy and Carbon.

We note the Establishment of science-based carbon reduction targets, and Melbourne airport's desire to Implement the Airports Council International Level 2 Airport Carbon Accreditation and progress towards Level 3 accreditation. Also the Implementation of a Carbon Management Plan. Carbon accreditation and carbon magaement plan onlies applies to ground infrastructure and still ignores aviation emissions, and how expanding capacity, induces aviation demand growth and growth in emissions.

(16.3.2.3 Environmental monitoring)
Environmental monitoring is crucial, and aviation emissions associated with Melbourne Airport should be part of the environmental monitoring process.

We note that "In addition to monitoring environmental effects within the airport site, Melbourne Airport also monitors some aspects that can affect the surrounding environment." As aviation emissions have a global impact, these should be monitored closely and reported to the community on a regular basis.

(16.4.2.2 Background Ecologically Sustainable Development)
"ESD aims to meet the needs of people today while conserving our ecosystems for the benefit of future generations."

The impact of aviation emissions, as well as the carbon footprint of Melbourne airport infrastructure should be included to inform ESD standards.

We note assessments by Melbourne Airport have concluded that "projected changes in climate will exacerbate many existing climate-related risks. In particular, those risks related to high temperatures, extreme rainfall, drought and fire weather are likely to increase in both likelihood and severity. The effect of climate change on other weather-driven risks such as those related to wind and lightning is less clear."

As Melbourne Airport is working to build its resilience to a range of possible future scenarios, it should include aviation emissions, and the need to limit and reduce these emissions, when developing a Climate Change Adaptation and Mitigation Framework.

(16.4.3.1 Targets)
Targets for limiting aviation emissions need to be set in place in addition to the targets below, This requires limiting aviation growth, and limiting aviation infrastructure expansion to limit demand.

- 20% reduction of annual grid electricity consumption by FY20 (compared with FY17)
- Install 10 megawatts of renewable energy capacity by 2021
- Establish science-based carbon reduction targets
- Implement the Airports Council International Level 2 Airport Carbon Accreditation and progress towards Level 3 accreditation
- Develop a Carbon Management Plan

(16.4.6.2 Background – land) PFAS contamination
We note with great concern PFAS contamination at Melbourne airport and contamination of local waterways. We note this has already economically impacted water users outside of the Airport precinct. Adequate cleanup of this contamination and full compensation for people impacted should be made by the Airport.[14]

(16.4.8 Air quality and ground-based noise)
Noise and air pollution needs to be closely monitored and regularly reported upon to the community, especially locally.

Noise and particulate pollution already impacts surrounding suburbs and levels need to be closely monitored.

Airport expansion, especially the runway development program will impact more businesses and residents over a much greater area with new flightpaths.

We note the presence of two monitoring stations that continuously monitor air pollutants including nitrogen dioxide (NO 2), sulphur dioxide (SO 2), ozone (O 3), carbon monoxide (CO), hydrocarbons, airborne fine particulate matter (PM 10 and PM 2.5) and meteorological parameters such as wind speed and direction.

(16.4.9 Waste management)
This is an area that Melbourne airport could play a significant leadership role. The airport should set a target of zero waste to landfill by 2030, a target that has recently been set by Moreland Council.

[14] The Age, 1 October, 2018. Airport's toxic runoff leaves farmers unable to use water they bought https://www.theage.com.au/national/victoria/airport-s-toxic-runoff-leaves-farmers-unable-to-use-water-they-bought-20180927-p506c7.html Accessed 7 October, 2018

The Airport needs to work through sustainable procurement policies, recycling initiatives and through partnerships with airport businesses to increase the level of recycling, and food waste to composting.

(17.0 Safeguarding Melbourne Airport)
Aviation Growth should not be inimical to maintaining, protecting and supporting ongoing operations and viability of Melbourne Airport. Growth in aviation emissions needs to be limited. This requires capping aviation demand, limiting aviation capacity at Melbourne airport. The growth model that includes increases to aviation emissions should be rejected as unsustainable and poor business practice.

We note that constraining airport runway and terminal development would also help Minimise the urban heat island effect.

We note the desire of Melbourne airport to develop and begin implementing a Greenhouse Action Plan to reduce greenhouse gas emissions from Melbourne Airport's operations. We would like to see similar plans developed of how best to limit demand for aviation in limiting aviation emissions.

We note the desire of Melbourne airport to improve Climate resilience by Preparing a Climate Change Adaptation and Mitigation Framework, including a risk and opportunity assessment for the whole of Melbourne Airport on the potential impacts of climate change. This should include an assessment of aviation emissions that derive from Melbourne airport and how these emissions can be limited and eventually reduced.

We note the desire of Melbourne airport to Implement the Airports Council International Level 2 Airport Carbon Accreditation requirements including effective carbon management and progress towards a reduced carbon footprint. Improving infrastructure carbon footprint is essential but it should not be used to greenwash the total climate change impact of aviation through the huge amount of aviation emissions.

We note Melbourne Airport has taken the TAKE2 Climate Change Pledge as part of it's Collaboration with the Victorian Government and other businesses to support the Victorian Government's commitment to reach net zero emissions by 2050. Such commitment should include the aviation emissions component that Melbourne Airport generates by it's presence.

Travel Demand Management
We note Melbourne Airport is interested in Travel demand management through Exploring opportunities for employee and public parking facilities that are accessible from Airport Drive and Sunbury Road.

We contend that Melbourne Airport should also be exploring options for aviation travel demand management as part of the business planning, risk reduction and commitment to reducing emissions to meet Australia's global commitments on climate targets.