CITY OF MELBOURNE

National Carbon Offset Standard for Events

Carbon Neutral Program

Pre-Event Public Disclosure Summary

Responsible entity name
City of Melbourne

Events
Melbourne Fashion Week (31 August to 7 September 2018)
Melbourne Music week (16 to 24 November 2018)

Event Type
Large Event Portfolio

Declaration
To the best of my knowledge, the information provided in the Public Disclosure Summery is true and correct and meets the requirements of the National Carbon Offset Standard for Events.

Angela Hann
Events Branch Manager

City of Melbourne

Australian Government
Department of the Environment and Energy

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Glossary

Term	Definition
Biofuel	Energy derived from renewable plant and animal materials. Examples include biodiesel (often based on vegetable oils), ethanol (often made of corn or sugarcane) and biogas (often the product of organic waste degradation).
Carbon dioxide equivalence (CO_2-e)	A standard measure that takes account of the global warming potential of different greenhouse gases and expresses the effect in terms of carbon dioxide impact. Measured in kilograms ($kgCO_2$-e) and tonnes (tCO_2-e).
Carbon inventory	An account of the greenhouse gas emissions that are attributable to an entity or event.
Carbon offsets	Represents reductions or removals of greenhouse gases from the atmosphere, relative to a business-as-usual baseline. Carbon offsets are tradeable and often used to negate (or offset) all or part of another entity's emissions.
Direct GHG emissions	Emissions from sources that are owned or controlled by an organisation.
Embodied emissions	Emissions that are generated over the entire product lifecycle – including production, use and end-of-life.
Energy audit	A process for documenting the energy consumed by a building or organisation and evaluating where energy consumption can be reduced.
GreenPower	Renewable energy certified under a joint initiative of the ACT, NSW, SA, VIC and TAS governments GreenPower program. Visit Green Power website.[1]
Indirect GHG emissions	Emissions that are a consequence of an organisation's activities, but the emissions sources are not owned or controlled by the organisation.
ISO 20121	ISO 20121: Event Sustainability Management Systems is the international standard that sets out requirements for sustainable event management.
Materiality	The importance or significance of an impact source impact within the inventory.
Renewable Energy Certificates	Certificates created by power stations or small-scale installations that generate electricity from renewable sources. Each certificate represents one megawatt hour of renewable energy generation.
Scope 1 emissions	The release of greenhouse gas into the atmosphere as a direct result of an organisation's activities.
Scope 2 emissions	The release of greenhouse gas as a result of electricity generation, heating, cooling or steam that is consumed by an organisation.
Scope 3 emissions	Greenhouse gases emitted as a consequence of an organisation's activities but by another organisation (e.g. embodied energy in materials, flights).
Sustainable Event Management (SEM)	Incorporating sustainability into the planning and implementation of events.

1 https://greenpower.gov.au/About-Us/

1 Introduction

City of Melbourne has a vision for Melbourne as a bold, inspirational and sustainable city.

Melbourne is well known for its annual Premier Events such as Moomba, Melbourne Music Week, Melbourne Fashion Week and New Year's Eve. Together, these events attract thousands of patrons and visitors from interstate and overseas.

City of Melbourne's Zero Net Emissions Strategy sets an ambitious target to achieve zero net emissions for the city. In line with this strategy, City of Melbourne has been certified Carbon Neutral for Council operations under the National Carbon Offset Standard, and will continue to operate as a carbon neutral organisation. To support this strategy, City of Melbourne has released an Emissions Reduction Plan for our Operations 2016-2021.

As part of our Emissions Reduction Plan we are working to reduce the emissions from our events. In 2018, we commenced a pilot project to certify a portfolio of our premier events Carbon Neutral under the Australian Government's National Carbon Offset Standard.

To obtain certification, City of Melbourne engaged ARUP to assist establish a pre-event greenhouse gas emissions profile for two events in our Premier Events portfolio:

- Melbourne Fashion Week 31 August to 7 September 2018
- Melbourne Music Week 16 to 24 November 2018.

Our aggregated event portfolio is predicted to have total emissions of 993 tonnes CO_2-e, as outlined in Table 1.

Table 1: Aggregated emissions summary

Scope	Emissions source	kg CO_2-e
1	Generators	9,413.00
1	Gas	381.08
2	Electricity	19,694.15
3	Water	26.01
3	Landfill waste	25,231.17
3	Comingled	0
3	Drink recycling	0
3	Food to landfill	4,621.11
3	Food to compost	0
3	Non-alcoholic	34,485.64
3	Beer	134,042.12
3	Wine & spirits	29,061.87
3	Tea & coffee	6,914.97
3	Meal - with red meat	103,961.46
3	Meal - other	17,539.89
3	Dessert	987.07

Scope	Emissions source	kg CO_2-e
3	Domestic flights	95,241.65
3	International flights	69,775.74
3	Train	55,715.57
3	Tram	99,719.43
3	Bus	23,583.12
3	Car/Taxi/Uber	105,076.54
3	Bicycle	0
3	Walk	0
3	Skateboard	0
3	Guest Accommodation	8,700.00
3	Marketing and publications	1,647.56
3	New construction materials	5,237.52
1	Generators used during/ for construction	0
3	Out of scope emissions	141,679.00
N/A	Total gross emissions	993,011.00
N/A	GreenPower or retired LGCs	0
N/A	Total net emissions	993,011.00

Greenhouse gas emissions considered include carbon dioxide (CO2), methane (CH4), nitrous oxide (N20), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3).

Eligible offsets purchased include:

- 250 tonnes of Australian Carbon Credit Units (ACCU) from a savannah burning project in Western Australia 'cancelled on behalf of City of Melbourne - Melbourne Fashion Week (31 August – 7 September 2018) for its carbon neutral claim against the National Carbon Offset Standard' Clean Energy Regulator[2].

  Registry: Australian National Registry of Emission Units.
  Serial range: 3,758,601,279 – 3,758,601,528.
  Emission Reduction Fund Project: EOP 100641.
  Account holder: Tasman Environmental Markets Pty Ltd.

- 400 tonnes of Verified Carbon Units (VCUs) from a wind farm in China were 'cancelled on behalf of City of Melbourne - Melbourne Fashion Week (31 August – 7 September 2018) for its carbon neutral claim against the National Carbon Offset Standard' The APX VCS Registry[3].

  Registry: The APX VCS Registry.
  VCU serial numbers: 4185-177872387-177872786-VCU-009-APX-CN-1-1056-01032012-31082012-0.
  Originating carbon offset project: CECIC Zhangbei Gaojialiang Wind farm Project.
  Project type: Energy industries (renewable/non-renewable sources).
  Account holder: First Climate.

- 344 tonnes of Australian Carbon Credit Units (ACCU) from a savannah burning project in Western Australia were 'cancelled on behalf of City of Melbourne - Melbourne Music Week (16 – 24 November

2 http://www.cleanenergyregulator.gov.au/OSR/ANREU/The-Australian-national-registry-of-emissions-units
3 https://vcsregistry2.apx.com/myModule/rpt/myrpt.asp

2018) for its carbon neutral claim against the National Carbon Offset Standard' Clean Energy Regulator[4].

Registry: Australian National Registry of Emission Units.

Serial range: 3,758,601,529 – 3,758,601,872.

Emission Reduction Fund Project: EOP 100641.

Account holder: Tasman Environmental Markets Pty Ltd.

Details on each individual event are provided below.

A post-event report will be provided at the conclusion of the events, following independent assurance.

[4] http://www.cleanenergyregulator.gov.au/OSR/ANREU/The-Australian-national-registry-of-emissions-units

2 Melbourne Fashion Week

2.1 Introduction

Arup was engaged by the City of Melbourne to develop a pre-event greenhouse gas emissions profile for Melbourne Fashion Week 2018. The pre-event profile will be utilised to offset the events emissions prior to the actual event later in the year. This report documents the process of predicting emissions and includes recommendations to reduce emissions in key focus areas.

2.1.1 Melbourne Fashion Week

Melbourne Fashion Week is unique event celebrating consumer fashion. The week-long event is one of the largest fashion events in Australia with up to 69,000 attendees in 2017. Held annually for over twenty years, the event aims to showcase emerging and established brands, designers and models.

Hosting more than 8,000 events, festivals and exhibitions each year, the City of Melbourne recognises the importance of sustainable events. Managing these events with a focus on sustainability has multi-dimensional benefits ranging from the community to City of Melbourne's strategic vision. As a large event, Melbourne Fashion Week is an opportunity to showcase City of Melbourne's dedication to sustainability. In 2018, Melbourne Fashion Week is projected to have 74,000 attendees including guests and staff. Large events like Melbourne Fashion Week are resource-intensive by nature and therefore have several opportunities to reduce emissions.

Sustainable events in recent years have become more important to organisers and attendees alike especially with the first International Standard for Event Sustainability Management Systems (ISO 20121), developed in 2012. The pre-event emissions profile for Melbourne Fashion Week 2018 has been developed based on the National Carbon Offset Standards (NCOS) for Events for pre-event reporting. Predictive event emissions were based on actual collected data from Melbourne Music Week 2015 (Melbourne Music Week 2015).

This pre-event profile includes:

- Projected greenhouse gas emissions from the event
- Identification of included and material emissions including the scope of boundary for emissions
- Recognition of sensitive emissions that can vary pre-event and during the event
- Recommendations for reducing event emissions

2.2 Pre-event Emissions Assessment Approach

2.2.1 Approach

The methodology for the pre-event emissions assessment of Melbourne Fashion Week 2018 is described below, based on five key stages.

- Stage 1. Define emissions scope.

  Arup facilitated a materiality workshop with City of Melbourne to discuss and determine the scope of the footprint to be included in the assessment. The footprint scope that was decided upon is further detailed in Section 2.3.

- Stage 2. Calculate 2018 emissions inventory.

Arup developed a tool for assessing venue sustainability and emissions in Microsoft Excel and populated with current emissions factors.

Using this tool, Arup created a footprint of Melbourne Fashion Week based on Melbourne Music Week 2015 to understand where the largest sources of emissions would come from before the actual event. Results of the emissions inventory are presented in Section 2.4.

- Stage 3. Research best practice actions.

  Alongside the emissions inventory calculations, Arup undertook research into best practice actions of sustainable events management. A summary of actions to reduce emissions are presented in Appendix C.1.

- Stage 4. Develop best practice emissions inventory.

  Combining the best practice research and predicted emissions inventory resulted in the creation of a best practice emissions inventory. This details how Melbourne Fashion Week can decrease emissions and improve sustainability in the future.

  Based on an understanding of the largest emissions sources, initiatives that could be applied to Melbourne Fashion Week were prioritised and quantified.

- Stage 5. Recommend priority actions.

  Based on the best practice inventory and research undertaken, Arup have made recommendations of potential sustainability actions for future Melbourne Fashion Week events. These recommendations align with the broader City of Melbourne sustainability goals, and consideration is given as to how they could be implemented.

2.2.2 Assumptions and limitations

Data used for the pre-event carbon assessment was based on a combination of consultation with City of Melbourne event organisers and actual emissions calculated for Melbourne Music Week in 2015. The following assumptions were made:

- Melbourne Fashion Week has seen a growth in attendee numbers year on year by an average of 4-5%. We assumed this growth would continue and conservatively allowed for a 7% growth to 74,000 attendees
- Relevant emissions factors have been updated for 2018
- That ground transport, catering, waste and construction profiles would be similar to that of other large events like Melbourne Music Week (where actual data exists), allowing for emissions be calculated proportionately
- Flight transportation estimated based on discussions with City of Melbourne event organisers
- Not all the events at Melbourne Fashion Week will be included in the emissions profile. Section 2.3.1 outlines the materiality assessment for which events were in and out of scope, primarily driven by the ability for City of Melbourne to influence the outcomes. For the events that were outside of the scope of the detailed analysis, additional emissions calculated based on an estimate of the scale of excluded events, using a per person emissions average. Details of these emissions are outlined in Section 2.4.1 .

2.2.3 Sensitivity analysis

Sensitive emissions are the emissions that are subject to change between the pre-event carbon analysis and during the event. These emissions sources can variably change depending on factors such as attendees or location of the events. For Melbourne Fashion Week 2018, the identified sensitive emissions are catering, waste and transport. As part of the pre-event emissions profile, these sensitive emissions must be considered and compensated with an uplift factor. These uplift factors are way to account for extra emissions

resulting in a conservative approach to the total pre-event emissions. Table 2 below documents the sensitive emissions, their impact and the conservative approach to quantifying them.

Table 2: Sensitive emissions

Emissions Source	Effect of variation on carbon account	Conservative approach for sensitive emissions
Catering	Catering represents 40% of the total predicted emissions for Melbourne Fashion Week 2018. An increase in attendees will likely lead to an increase in the emissions from catering.	A 7% increase in the emissions associated with food and beverages has been factored into the calculating for the report.
Waste	Waste is projected to be a small proportion of the total waste generation at 4%. It is expected that an increase in attendees will also lead to more waste being generated from food and other sources.	A 7% increase in waste emissions has been factored into the calculations for this report.
Transport	Transport is predicted to be the largest source of emissions for Melbourne Fashion Week 2018 at 53%, which is dependent upon total attendee numbers but most significantly on domestic and international flights by performers or support staff. Transport type will depend on event venues, potentially changing the transport profile (e.g. distant from public transport, encouraging more attendees to drive cars)	Transport is divided into two categories, ground and air travel. A 7% increase in ground transport emissions has been factored into the calculations for this report. Air travel was estimated based on the number of performers or staff travelling directly or partially from the event. We have over-estimated these flights selecting the longest flight distances as reference points for analysis.

2.3 Melbourne Fashion Week Emissions Scope

2.3.1 Materiality assessment

The eight-day event occurs across various unique venues that are directly managed by City of Melbourne or fall under the banner of the program. Comprised of runways, exhibitions and pop-ups these events are scattered around the city. As events are often complex programs with varied and non-standard activities, an assessment needs to be undertaken to determine those emissions that are deemed ‘material’ to the event and therefore should be considered within the scope of the assessment. The following four criteria were reviewed to determine potential emission sources at the event. The materiality assessment was conducted with City of Melbourne events staff during a workshop, based on criteria used in the emissions assessments of previous City of Melbourne events.

1. Does City of Melbourne have high control or influence over emissions source?

To determine the scope and extent of the emissions footprint, City of Melbourne sought to understand the particular emissions that are directly induced by the event. A structured workshop was run with the City of Melbourne events team to define the scope of the event in terms of two factors:

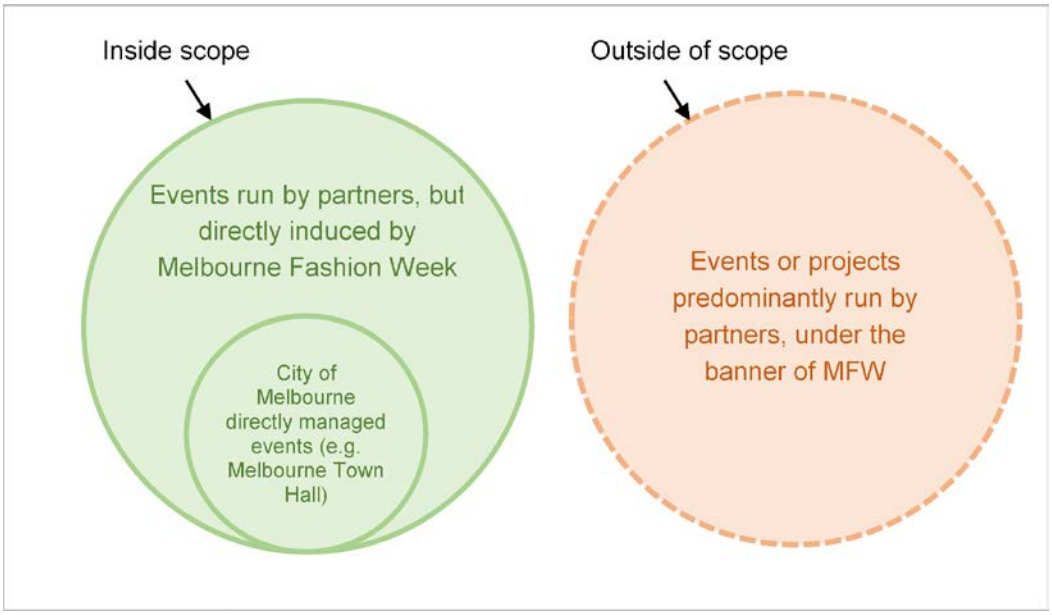
- The organisation responsible for managing and programming the event; and
- Whether the event is directly induced as a result of Melbourne Fashion Week

As a result, Melbourne Fashion Week events can be classified according to the following factors:

1. City of Melbourne directly manages event
2. Run by partner, but directly induced by City of Melbourne, Melbourne Fashion Week
3. Partner directly manages event, under the banner of Melbourne Fashion Week

Events that are classified as either classification 1 or 2, are included within the carbon footprint scope as represented in Figure 1 below.

Figure 1: City of Melbourne, Melbourne Fashion Week – Carbon Footprint Scope



The rationale for excluding the events directly managed by venues partners from the scope of the assessment is that those events would have:

- occurred or existed regardless of Melbourne Fashion Week and its program
- been event-managed and undertaken directly by established organisations or producers, with little City of Melbourne involvement, and
- operated solely as a partner, or under the banner of Melbourne Fashion Week for the reasons of coincidental timing, and shared focus or objectives.

Consistent with greenhouse gas methodologies, as City of Melbourne have limited operational control of the above events, these have been excluded from the carbon footprint scope.

2. Is the emission source deemed one of high-risk to City of Melbourne?

Emissions sources are deemed to be high risk if there is a high perceived risk to City of Melbourne's reputation as a result of the emissions source (for example, highly visible impact sources such as marketing materials). Criteria were based on City of Melbourne Moomba and Melbourne Music Week 2015 materiality assessments.

3. Is the emission source of particular value to the event stakeholders?

High value emissions sources are those that may align with values of particular stakeholders, for example saving water may be particularly important to some even though the associated emissions are relatively small. The assessment of each emissions source against this criterion was based on the judgement of the City of Melbourne event management team for Melbourne Fashion Week.

4. Is the combined impact of the emission source significant in quantitative size?

The relative contribution of each emissions source to the overall Melbourne Fashion Week footprint was based on the inventory of Melbourne Music Week 2015 emissions. The significance of each emissions source in terms of size was based on this assessment. The preliminary inventory is included in Appendix A, which also outlines the results of the assessment against the other criteria outlined above.

2.3.2 Emissions inventory scope

The identified sources of emissions for Melbourne Fashion Week are summarised in Table 3 below. Immaterial emissions sources have been excluded from the scope of the inventory.

Greenhouse gas emissions considered include carbon dioxide (CO2), methane (CH4), nitrous oxide (N20), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3).

Full results of the materiality assessment are in Appendix A.

Table 3: Emissions inventory

1. City of Melbourne directly manages event

Source type	Emissions source	Included in scope	Scope Category
Venue energy emissions	Diesel generators	Yes	1
Venue energy emissions	Gas usage	Yes	1
Venue energy emissions	Electricity usage	Yes	2
Event indirect emissions	Contractor vehicle use	No	1
Event indirect emissions	Portable toilet usage	No	3
Event indirect emissions	Food consumed by patrons	Yes	3
Event indirect emissions	Drink consumed by patrons	Yes	3
Event indirect emissions	Patron accommodation	No	3
Event indirect emissions	Patron transport	Yes	3
Event indirect emissions	Venue waste	Yes	3
Event indirect emissions	Marketing and publications	Yes	3
Event indirect emissions	Model/staff accommodation	No	3
Event indirect emissions	Model/staff flights	Yes	3
Event indirect emissions	Cleaning services	No	3
Event indirect emissions	IT services	No	3
Event indirect emissions	Telecommunication services	No	3
Venue construction impacts (MTH only)	New construction materials	Yes	3
Venue construction impacts (MTH only)	Staging / equipment / lighting hire	No	3
Venue construction impacts (MTH only)	Diesel generators used during/for construction	Yes	1

Source type	Emissions source	Included in scope	Scope Category
Venue construction impacts (MTH only)	Fuel usage by construction contractors	No	1
Venue construction impacts (MTH only)	Construction waste	No	3
Warehouse emissions	Warehouse electricity usage	No	2

2. Run by partner, but directly induced by Melbourne Fashion Week

Source type	Emissions source	Included in scope	Scope Category
Venue energy emissions	Diesel generators	Yes	1
Venue energy emissions	Electricity usage	Yes	2
Event indirect emissions	Food consumed by patrons	Yes	3
Event indirect emissions	Drink consumed by patrons	Yes	3
N/A	Patron accommodation	No	3
N/A	Patron transport	Yes	3
N/A	Venue waste	Yes	3

3. Partner directly manages event, under the banner of Melbourne Fashion Week

No emission sources in scope.

The following sources have been excluded from the emissions boundary:

- Contractor vehicle use
- Portable toilet usage
- Patron accommodation
- Cleaning services
- IT services
- Telecommunication services
- Staging/ equipment/ lighting hire
- Fuel usage by construction contractors
- Construction waste
- Warehouse electricity usage

These emissions sources were deemed immaterial because they represent a small proportion of the total emissions. The sum of these emissions on the total emissions amounts to an estimated 4.9% of the total carbon account lower than the 5% maximum as stated in the NCOS standards for events. These were also excluded because they are largely outside of City of Melbourne's control.

Additionally, other emissions associated with the event including pre-event planning and preparation, postage and freight and staff commuting are also excluded from the study. It was determined that City of Melbourne staff are chiefly responsible for these activities, and therefore these emissions are absorbed in the organisation's carbon neutrality certification.

2.3.3 Data Collection

Data collection sheets will be provided to all venue operators and partner contractors to collect data relevant to the events operations. These will include energy use, diesel generators use, fuel consumption, food and beverage sales, waste disposal and construction materials utilised.

For the transport data, surveys will be taken with a suitable sample of attendees to determine the use of transport methods to and from the event. To ensure compliance, data collection will be embedded into the agreement with contractors along with training of venue staff to ensure accuracy of data collection.

2.4 Melbourne Fashion Week 2018 emissions inventory

This section outlines the results of the pre-event emissions inventory analysis from Melbourne Fashion Week 2018. The emissions were analysed for the Melbourne Town Hall and in-scope partner venues.

2.4.1 Out of scope emissions profile

The emissions from events that have were deemed outside the scope of the study were included at a high level. These events were determined as difficult to control due to third party organisations running the event independently from City of Melbourne (e.g. independent of support or funding), therefore data collection and a complete emissions profile would be difficult to acquire.

To ensure Melbourne Fashion Week will be certified as carbon neutral, additional emissions associated with these events has been calculated to compensate for these events. Through discussions with Melbourne Fashion Week event organisers, it is predicted that these events would contribute an extra 15% of activities, equating to an additional 11,100 attendees (based on 74,000 total estimated attendees). Using the total predicted emissions per attendee of 7.62 kg CO_2-e per attendee, the additional emissions for out of scope events equates to 84.7 tonnes CO_2-e for the event.

2.4.2 Carbon emissions profile

Melbourne Fashion Week 2018 is predicted to have a total emission of 649.9 tonnes CO_2-e inclusive of out of scope events. The breakdown of emissions outlined in the rest of the report is based on only in-scope events. These emissions were estimated from Melbourne Music Week 2015 data and discussions with Melbourne Fashion Week 2018 organisers.

In-scope emissions is estimated to be 565.16 tonnes CO_2-e. This equates to 7.62 kg CO_2-e per attendee, or 71 tonnes tonnes CO_2-e per day. The breakdown of emissions from sources are shown in Figure 2 and Figure 3 below. Most of the predicted emissions for the event are from transport (52%) and catering (40%).

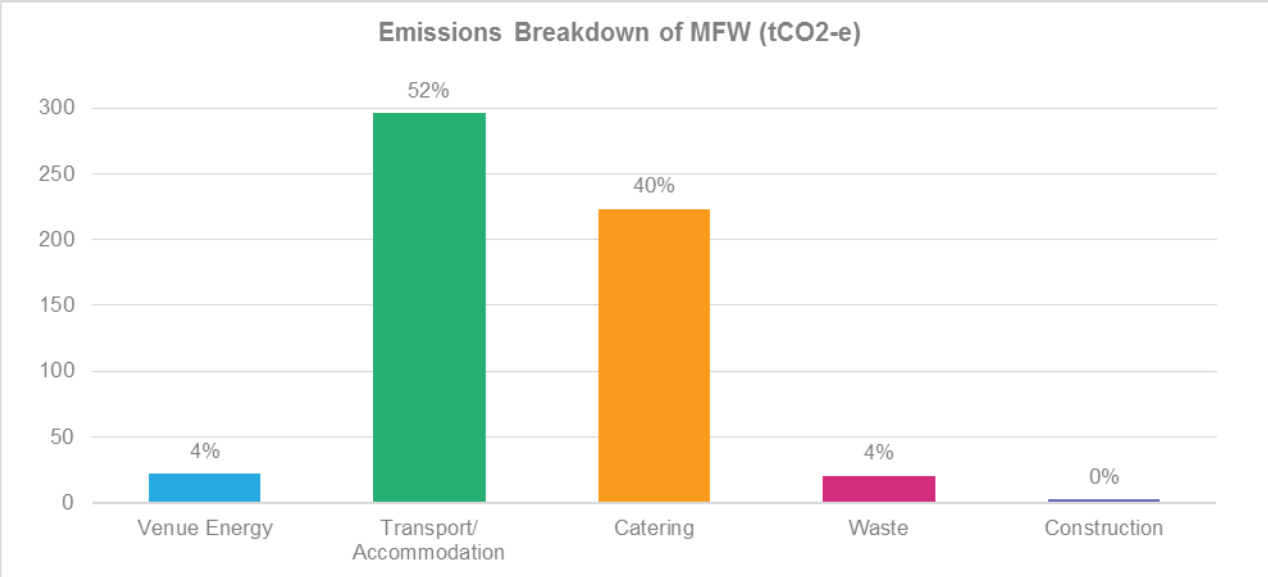
Figure 2: Total emissions profile for Melbourne Fashion Week

- Venue energy emissions
  Utilities: 13,851 kg CO2-e
  generators: 8,213 kg CO2-e
  Subtotal - venue energy emissions: 22.06 tonnes CO_2-e
- Transport emissions
  Flights: 98,952 kg CO2-e
  Group Transportation: 192,308 kg CO2-e
  Accommodation: 4,640 kg CO2-e
  Subtotal – Transport emissions: 295.90 tonnes CO_2-e
- Catering emissions
  Food: 83,970 kg CO2-e
  Drink: 139,073 kg CO2-e

Subtotal – Catering emissions: 223.04 tonnes CO_2-e

- Waste emissions
  Utilities: 21,540 CO2-e
  Subtotal – water emissions: 21.54 tonnes CO_2-e
- Construction emissions
  Materials and activities: 2,619 kg CO2-e
  Subtotal - construction emissions: 2.62 tonnes CO_2-e
- Total emissions at Melbourne Fashion Week: 565.16 tonnes CO_2-e

Figure 3: Anticipated proportion of emissions by source type at Melbourne Fashion Week 2018



Emission	tonnes CO2-e	%
Venue energy	22.06	3.9%
Transport/Accommodation	295.9	52.4%
Catering	223.04	39.5%
Waste	21.54	3.8%
Construction	2.62	0.5%
Total	565.16	N/A

2.4.3 Offsets summary

Eligible offsets purchased include:

- 250 tonnes of Australian Carbon Credit Units (ACCU) from a savannah burning project in Western Australia 'cancelled on behalf of City of Melbourne - Melbourne Fashion Week (31 August – 7 September 2018) for its carbon neutral claim against the National Carbon Offset Standard' Clean Energy Regulator[5].

  Registry: Australian National Registry of Emission Units.
  Serial range: 3,758,601,279 – 3,758,601,528.
  Emission Reduction Fund Project: EOP 100641.
  Account holder: Tasman Environmental Markets Pty Ltd.

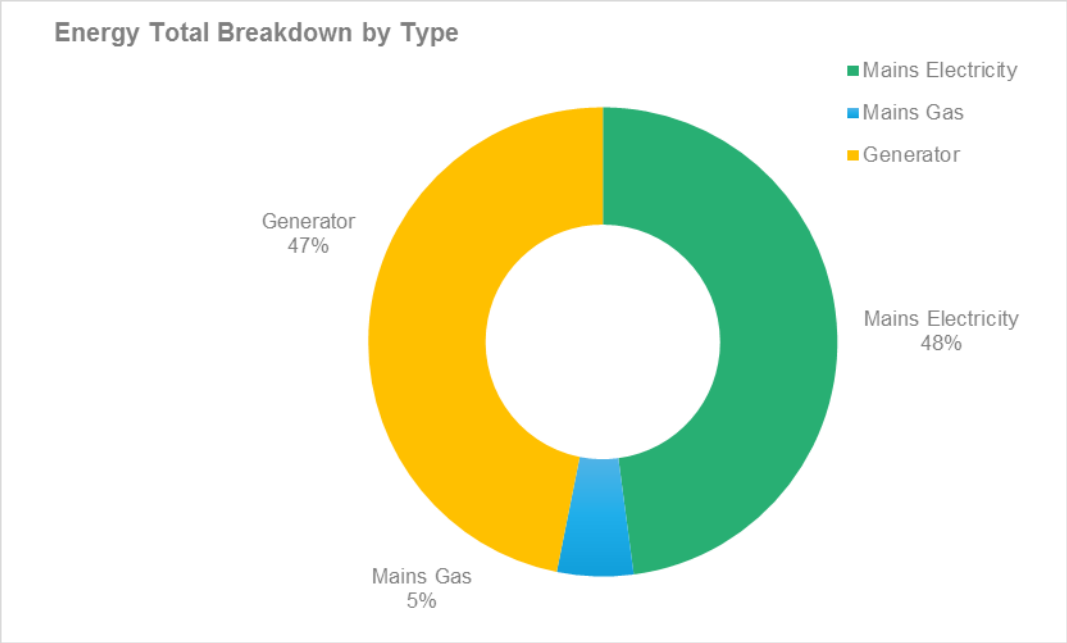
- 400 tonnes of Verified Carbon Units (VCUs) from a wind farm in China were 'cancelled on behalf of City of Melbourne - Melbourne Fashion Week (31 August – 7 September 2018) for its carbon neutral claim against the National Carbon Offset Standard' The APX VCS Registry[6]

  Registry: The APX VCS Registry.
  VCU serial numbers: 4185-177872387-177872786-VCU-009-APX-CN-1-1056-01032012-31082012-0.
  Originating carbon offset project: CECIC Zhangbei Gaojialiang Wind farm Project.
  Project type: Energy industries (renewable/non-renewable sources).
  Account holder: First Climate.

2.4.4 Energy

The total predicted in-scope energy consumption at Melbourne Fashion Week is be 26,487 kWh representing 22.06 tonnes CO_2-e. The breakdown by energy source is shown in Figure 4 below. There is anticipated to be an even split between mains electricity 48% and that produced by generators 47%. City of Melbourne events staff indicated that sixteen generators were intended to be used throughout the event, which have been included in this assessment.

Figure 4: Energy breakdown from source



5 http://www.cleanenergyregulator.gov.au/OSR/ANREU/The-Australian-national-registry-of-emissions-units
6 https://vcsregistry2.apx.com/myModule/rpt/myrpt.asp

Energy Type	% Breakdown
Mains electricity	48%
Mains gas	47%
Generator	5%

2.4.5 Transport

Transport represents 52% of the total event emissions broken down into ground and air travel. To predict the ground transport emissions for Melbourne Fashion Week 2018, data collected from Melbourne Music Week 2015 was used to indicate the proportion of event attendees traveling by different transport options. As shown in Table 4 below, public transport (train, tram and bus) is the highest transport mode. This is expected due to the accessibility of the Melbourne Fashion Week events being in and around Melbourne CBD.

Table 4: Predicted ground transport emissions

Transport mode	Number of trips	Passenger kilometres travelled: % by mode	Passenger kilometres travelled: Passenger kilometres	Passenger kilometres travelled: % by mode	Emissions (tCO_2-e)	Emissions % by mode
Train	11,560	16%	234,483	17%	38	20%
Tram	22,188	30%	351,683	26%	67	35%
Bus	1,072	1%	87,063	6%	16	8%
Car, taxi, Uber	15,470	21%	311,424	23%	71	37%
Bicycle	7,411	10%	39,523	3%	0	0%
Walk, skateboard	16,299	22%	319,827	24%	0	0%
Total	74,000	100%	1,344,004	100%	192	100%

The event organisers for Melbourne Fashion Week have identified that the event will engage a variety of national and international models and support staff. The total number of flights is predicted to be 40 with 6 international flights and 34 domestic flights associated with the event. It is predicted that a total of 98,952 kg CO_2-e will result from air travel to and from Melbourne Fashion Week 2018.

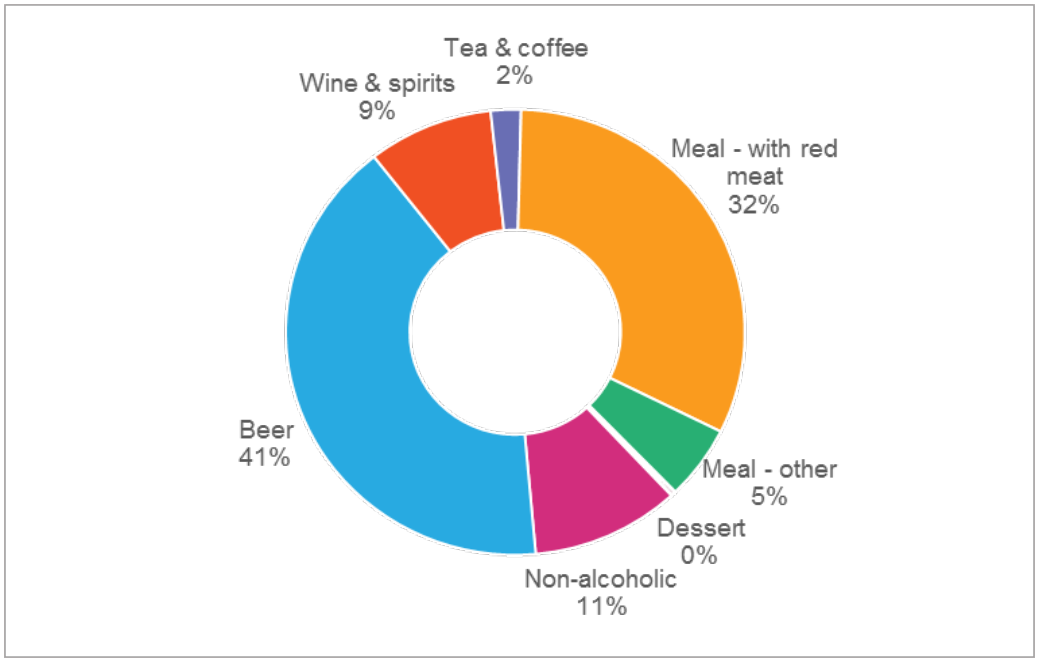
Accommodation for models and staff have also been included in the emissions profile. City of Melbourne indicated that they provided two nights of accommodation for all artists or staff flying to Melbourne for the event. The emissions for accommodation were calculated using data from Crown Melbourne 2016-17 Public Disclosure Summary[7]. Data for the standard king room and twin room emissions of 0.058 tonnes CO_2-e, per night accommodation was used in the calculation of emissions. This data point was selected as it most closely reflected that for which City of Melbourne provides to models and staff. Total predicted emissions associated with accommodation was determined to be 4.64 tonnes CO_2-e.

[7] NCOS Carbon Neutral Public Disclose Summary – Crown Melbourne Limited July 2016 to June 2017- http://www.environment.gov.au/system/files/pages/098c4887-66c4-4c9e-a6d2-fe1551b49009/files/crown-pds-2016-17.pdf

2.4.6 Catering

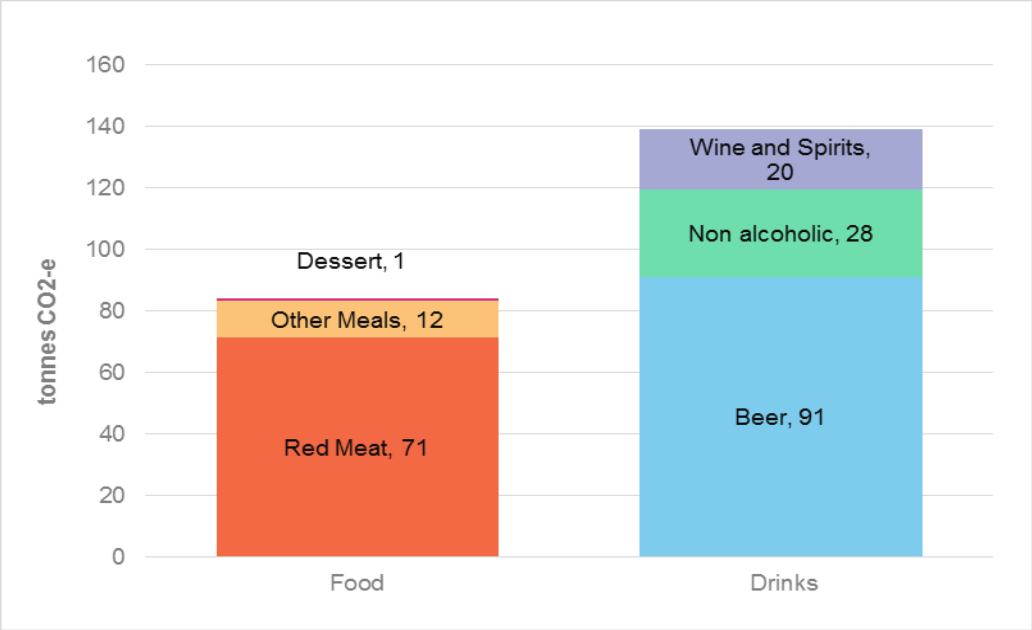
Catering is predicted to be the second largest contributor to the greenhouse gas emissions of Melbourne Fashion Week 2018. Food and drink from all venues is predicted to amount to 223.04 tonnes CO_2-e, or 40% of the total emissions for the event. Based on collected data, red meat and beer is traditionally the largest contributor to emissions from catering. It is expected that catering for this year's Melbourne Fashion Week is likely to have a similar catering emissions profile as that of Melbourne Music Week 2015.

Figure 5: Breakdown of predicted catering emissions



Catering Emission	% Breakdown
Meal - with red meat	32%
Meal - other	5%
Dessert	0%
Non-alcoholic	11%
Beer	41%
Wine and spirits	9%
Tea & coffee	2%

Figure 6: Emissions associated with food and beverages



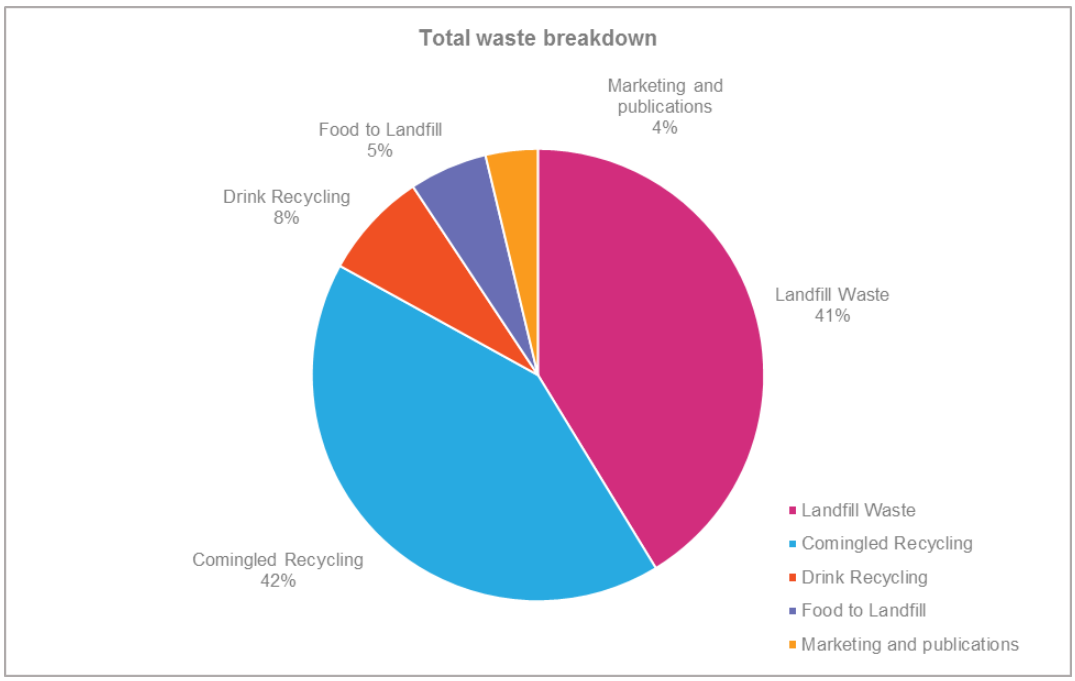
Emission Type	tonnes CO2-e
Food: Meal - red meat	71
Food: Meal - other	12
Food: Dessert	1
Drinks: Non-alcoholic	28
Drinks: Beer	91
Drinks: Wine and spirits	20

2.4.7 Waste

Waste for the pre-event emissions profile has been estimated using data collected for Melbourne Music Week 2015. It is anticipated that 21.54 tonnes CO_2-e of emissions associated with waste will be generated at Melbourne Fashion Week 2018. This figure also includes 1.1 tonnes CO_2-e of marketing and publication materials estimated from collected data from Melbourne Knowledge Week 2018. An average amount of marketing waste was calculated and then escalated based on the number of attendees. Figure 7 below shows the expected composition of waste generation for the event.

Overall, it is expected that half over the waste generated from the event will be recycled (comingled and drink recycling). We may see improvement in recycling rates in 2018 with increased awareness of sustainability and proper disposal of waste since 2015.

Figure 7: Waste breakdown



Waste type	% Breakdown
Landfill waste	41%
Comingled recycling	42%
Drink recycling	8%
Food to landfill	5%
Marketing & publications	4%

2.4.8 Construction

The specific details of the event construction needs are not yet finalised. Based on discussions with Melbourne Fashion Week event organisers, it was agreed that there would be similar levels of construction to that undertaken at Melbourne Music Week 2015. Construction in that year totalled 2.62 tonnes CO_2-e, primarily sourced from the construction of elements of the Melbourne Town Hall.

2.5 Melbourne Fashion Week recommendations to reduce emissions

2.5.1 Potential emissions reduction initiatives

Along with the pre-event projections of emissions, Arup also identified potential areas to reduce emissions at the event. If all the actions to reduce emissions are applied, an overall reduction of 53.5% from the total event could be achieved. The areas of possible reduction with actions are outlined in Table 5 below.

Table 5: Potential reductions and actions

Emissions Source	2018 Predicted Emissions	Post action emissions profile (kg CO_2-e)	Action	Potential reduction in source emissions (%)	Potential reduction (kg CO_2-e)	Potential reduction in Melbourne Fashion Week emissions
Generators	3,525	3,349	Appropriately size generators	5%	176	0.03%
Diesel Generators	4,682	16	Use biodiesel	99%	4,666	0.83%
Electricity usage	Combined electricity usage 13,575	Combined electricity usage 1230	Energy efficient light equipment	14%	1,913	0.34%
Electricity usage	Combined electricity used 13,575	Combined electricity usage 1230	Use lights efficiently	4%	508	0.08%
Electricity usage	Combined electricity used 13,575	Combined electricity usage 1230	1.5 kW solar array	1%	81	0.01%
Electricity usage	Combined electricity used 13,575	Combined electricity usage 1230	GreenPower	100%	8,119	1.45%
Electricity usage	Combined electricity used 13,575	Combined electricity usage 1230	LED lights	22%	3,021	0.53%
Food consumed by patrons	83,970	39,172	Replace red meat	53%	44,798	7.93%
Drink consumed by patrons	Combined drink consumed by patrons 139,073	Combined drink consumed by patrons 76,167	Less carbon intensive beer suppliers	66%	91,142	7.65%
Drink consumed by patrons	Combined drink consumed by patrons 139,073	Combined drink consumed by patrons 76,167	Carbon neutral wine suppliers	100%	19,717	3.49%
Patron transport	192,308	134,715	Incentivise PT	7%	12,963	10.19%
Model /staff flights	98,952	0	Offset flights	100%	98,952	17.51%

Emissions Source	2018 Predicted Emissions	Post action emissions profile (kg CO_2-e)	Action	Potential reduction in source emissions (%)	Potential reduction (kg CO_2-e)	Potential reduction in Melbourne Fashion Week emissions
Model/ staff accommodation	4,640	0	Select carbon neutral accommodation	100%	4,640	0.82%
Venue waste	Combined venue waste 20,424	Combined venue waste 11,595	Minimise disposable packaging	9%	1,838	0.33%
Venue waste	Combined venue waste 20,424	Combined venue waste 11,595	Encourage waste diversion	34%	6,991	1.24%
New construction materials	2,454	1,069	Use recycled materials	56%	1,385	0.25%
Total	535,390[8]	237,848	N/A	N/A	297,542	52.6%

For the full list of detailed action items, refer to Appendix C. The following actions have been identified to have the most reduction in emissions:

Replace red meat: Meals with red meat is predicted to contribute to 32% of food-related carbon emissions. Red meat (beef or lamb) is the highest carbon emissions intensive type of food (by $ or kg), primarily due to the methane related emissions from livestock. By replacing red meat with chicken, kangaroo meat or vegetarian options, up to 53% in catering-related emissions can be reduced or just over 8% of the events total predicted emissions. Another alternative is to replace meat with sustainable seafood. One of the approved NCOS certified organisations is Austral Fisheries which provide sustainable seafood that has been certified as carbon neutral in their operations.

Less carbon intensive beer: Based on Melbourne Music Week 2015, beer is expected to contribute to 41% of the food-related emissions at Melbourne Fashion Week 2018. Whilst individual counts of beer are less emissions intensive than other beverages, the amount of beers purchased will result in it being the largest contributor in beverage emissions. By sourcing beer from suppliers that are less carbon intensive in their production, beverage emissions can be reduced by up to 66% and overall emissions by 7.8%.

Carbon neutral wine supplier: Wine and spirits make up 9% of the total emissions associated with catering. There is potential here to offset these emissions by purchasing these beverages from a carbon neutral certified supplier. Ross Hill Wine Group based in NSW is NCOS certified and could supply wine for the event.

Offset flights: Flights associated with Melbourne Fashion Week 2018 is predicted to make up 17.7% of the total emissions for the event. These emissions can be completely offset through the purchasing of offsets from NCOS certified airlines. These airlines include Qantas, Tigerair Australia, Virgin Australia and Jetstar.

Biodiesel use for generators: Biofuel is energy derived from renewable plant and animal materials. By replacing the fuel source for generators, there can be large reductions in emissions. The reduction is

[8] This figure is the total of predicted emissions from sources where reductions can be achieved. This figure will differ from the overall emissions where sources of emissions have no potential reduction actions listed.

dependent on the fuel mix selected – 100% biodiesel fuels can result in a 99.9% emission reduction compared to pure diesel generators.

Green Power: City of Melbourne can acquire GreenPower for the Melbourne Fashion Week event. Purchasing 100% GreenPower will offset electricity-related emissions for the event. The result is not a reduction in total electricity usage but will contribute to the renewable energy generation elsewhere in Australia.

2.5.2 Recommendations

There is additional scope to reduce emissions at partner venues, through the influence City of Melbourne has as the overall manager of Melbourne Fashion Week. City of Melbourne can promote sustainable options by:

- opting to partner with venues with sustainable credentials
- deliver education programs to City of Melbourne staff and partner organisations around sustainable event management
- providing information to partner venues on sustainable initiatives that could be implemented, for example, installing prominent recycling bins or purchasing renewable energy
- developing contract clauses for partners that ensure partners take steps to reduce emissions, for example, offsetting their own emissions in order to come under the banner of Melbourne Fashion Week.

2.6 Conclusion

The City of Melbourne engaged Arup to develop a pre-event emissions profile for Melbourne Fashion Week 2018. The profile will be utilised to purchase emissions to offset the actual emissions and in order to become a carbon neutral event. The key findings were:

- Melbourne Fashion Week 2018 is predicted to have a total emission of 648.6 tonnes CO_2-e inclusive of out of scope satellite events
- Transport (52%) and food catering (40%) is expected to be the largest contributors of emissions
- Meals with red meat and beer is expected to make up 73% of total food related emissions

By applying the recommendations identified in Section 2.5.1, it is possible for Melbourne Fashion Week 2018 to reduce their emissions by 53.5% or 297.7 tonnes CO_2-e.

3 Melbourne Music Week

3.1 Introduction

Arup was engaged by City of Melbourne to develop a pre-event carbon emissions profile for Melbourne Music Week 16 to 24 November 2018 (Melbourne Music Week 2018). This report outlines the findings of the pre-event emissions inventory analysis, highlights recommendations for improving the sustainability of the upcoming event.

3.1.1 Melbourne Music Week

Melbourne Music Week (MMW) is a unique music event that celebrates Melbourne's thriving music scene. Held annually in November, Melbourne Music Week highlights the creativity and innovation of Melbourne, with over 100 events held over eight days. Melbourne Music Week 2018 will be the ninth iteration of the event and will involve partnerships with a range of promoters, venues, labels, artists and businesses.

The City of Melbourne manages Melbourne Music Week, along with a number of other Premier Events in the city, including Moomba Festival, Melbourne Fashion Week and New Year's Eve celebrations. Managing these events with a focus on sustainability provides benefits for the community and the environment, and aligns with City of Melbourne's vision for a bold, inspirational and sustainable city. City of Melbourne is a recognised leader in sustainable action, demonstrated in the eco-city goals outlined as part of the Future Melbourne strategy and Council Plan 2017-2021.

Large events such as Melbourne Music Week are resource-intensive by nature, and thus provide a special opportunity to engage and educate attendees on issues of sustainability. Sustainable events management has continued to gain prominence in recent years, with the first International Standard for Event Sustainability Management Systems (ISO 20121), published in 2012. Many music festivals and events around the world now have a growing focus on sustainable events management, with a view to reduce the negative impacts and enhance the positive outcomes of the event. This carbon account has been prepared based on the National Carbon Offset Standard (NCOS).

There is potential for events run by City of Melbourne, such as Melbourne Music Week, to be managed more sustainably, reducing their impact and helping to promote sustainability to the community. This report explores this potential through the following aims:

- Identify and analyse the pre-event greenhouse gas emissions from transport, venue energy, catering, waste and construction from Melbourne Music Week 2018
- Use this information to assess priority areas for the implementation of sustainability initiatives throughout the event and future years
- Research best practice in music events to understand and quantify which sustainability initiatives will be most effective in this context.

3.2 Pre-event Carbon Assessment Approach

3.2.1 Approach

The methodology for the pre-event emissions assessment of Melbourne Music Week is described below based on five key stages.

- Stage 1. Define emissions scope.

Arup facilitated a materiality workshop with City of Melbourne to discuss and determine the scope of the footprint to be included in the assessment. The event emissions scope is further detailed in Section 3.3.

- Stage 2. Establish 2018 pre-event emissions inventory.

  Arup developed an emissions inventory tool for data collection and analysis. We populated this tool with data collected at previous City of Melbourne events, and based on emissions assumptions determined and agreed with City of Melbourne events team.

  We then used to the tool to calculate a predicted emissions footprint of Melbourne Music Week 2018 activities. Results of the emissions inventory are presented in Section 3.4.

- Stage 3. Research best practice actions.

  Alongside the emissions inventory calculations, Arup undertook research into best practice actions of sustainable events management. A summary of actions to reduce emissions are presented in Appendix A.

- Stage 4. Develop best practice emissions inventory

  Combining the best practice research and predicted emissions inventory resulted in the creation of a best practice emissions inventory. This details how Melbourne Music Week can decrease emissions and improve sustainability in the future.

  Based on an understanding of the largest emissions sources, initiatives that could be applied to Melbourne Music Week were prioritised and quantified.

- Stage 5. Recommend priority actions

  Based on the best practice inventory and research undertaken, Arup have made recommendations of potential sustainability actions for future Melbourne Music Week events. These recommendations align with the broader City of Melbourne sustainability goals, and consideration is given as to how they could be implemented.

3.2.2 Assumptions and limitations

Data used for this pre-event carbon assessment was based on a combination of consultation with City of Melbourne and the actual emissions calculated for Melbourne Music Week 2015. The following assumptions were made:

- City of Melbourne estimate that Melbourne Music Week 2015 is predicted to have approximately the same number of attendees as Melbourne Music Week 2015
- City of Melbourne advised that Melbourne Music Week 2018 venue types and usage will be equivalent to those of Melbourne Music Week 2015, including a main venue or Hub alongside a range of other venues and partner venues
- Relevant emissions factors have been updated for 2018
- Where necessary, inputs have been updated for 2018, in consultation with City of Melbourne. This includes the number of generators used, the number of attendees, the number of flights taken by participants and support staff and the associated accommodation provisions.
- Not all the events at Melbourne Music Week were included in the detailed emissions profile. Section 3.3.1 outlines the materiality assessment for which events were in and out of scope, primarily driven by the ability for City of Melbourne to influence the outcomes. For the events that were outside of the scope of the detailed analysis, additional emissions calculated based on an estimate of the scale of excluded events, using a per person emissions average. Details of the how these emissions are outlined in section 3.4.1.

3.2.3 Sensitivity analysis

Sensitivity analysis is required to determine which emissions are subject to change between those assumed for the pre-event carbon analysis and the actual emissions produced during the event. Variance in attendee

numbers is likely to be the most significant factor of consideration. Any increase in attendees will influence the emissions produced across catering, waste and transportation. The emissions for venue energy and construction will however largely be unaffected by attendee numbers.

As part of the pre-event emissions profile, these sensitive emissions must be considered and compensated with an uplift factor. These uplift factors are a way to account for extra emissions resulting in a conservative approach to the total pre-event emissions. City of Melbourne events team advised that they are not anticipating much variation in attendee numbers from previous years, and expect that attendance numbers will be very similar to actual data collected for Melbourne Music Week 2015. However, as a conservative approach we have factored in a 5% increase in attendee numbers, which will influence overall emissions. Table 6 below documents the sensitive emissions, their impact and the conservative approach to quantifying them.

Table 6: Sensitive emissions

Emissions Source	Effect of variation on carbon account	Conservative approach for sensitive emissions
Catering	Catering represents 41% of the total predicted emissions for Melbourne Music Week 2018. The calculation was based on the Melbourne Music Week 2015. Any increase in attendees will likely lead to an increase in the amount of catering emissions.	A 5% increase in food and beverage emissions has been factored into the calculations for this report.
Waste	Waste is projected to be a small proportion of the total waste generation at 3.8%. It is expected that an increase in attendees will also lead to a more waste being generated from food and other sources.	A 5% increase in waste emissions has been factored into the calculations for this report.
Transport	Transport is predicted to be the largest source of emissions for Melbourne Music Week 2018 at 51%, which is dependent upon total attendee numbers but most significantly on domestic and international flights by performers or support staff. Transport type will depend on event venues, potentially changing the transport profile (e.g. distant from public transport, encouraging more attendees to drive cars)	Transport is divided into two categories, ground and air travel. A 5% increase in ground transport emissions has been factored into the calculations for this report. Air travel was estimated based on the number of performers or staff travelling directly or partially from the event. We have over-estimated these flights selecting the longest flight distances as reference points for analysis.

3.3 Melbourne Music Week Emissions Scope

3.3.1 Materiality assessment

As events are often complex programs with varied and non-standard activities, an assessment needs to be undertaken to determine those emissions that are deemed ‘material’ to the event and therefore should be considered within the scope of the assessment. The following four criteria were reviewed to determine potential emission sources at the event. The materiality assessment was conducted with City of Melbourne events staff during a workshop, based on criteria used in the emissions assessments of previous City of Melbourne events.

1. Does City of Melbourne have high control or influence over emissions source?

For this pre-event analysis, the City of Melbourne events team advised that the proportion of events run by City of Melbourne and established partners would remain the same as recorded for Melbourne Music Week 2015. A structured workshop was run with the City of Melbourne events team to define the scope of the event in terms of two factors:

- who is responsible for managing and programming the event; and
- whether the event is directly induced as a result of Melbourne Music Week.

As a result, all Melbourne Music Week events were classified according the following factors:

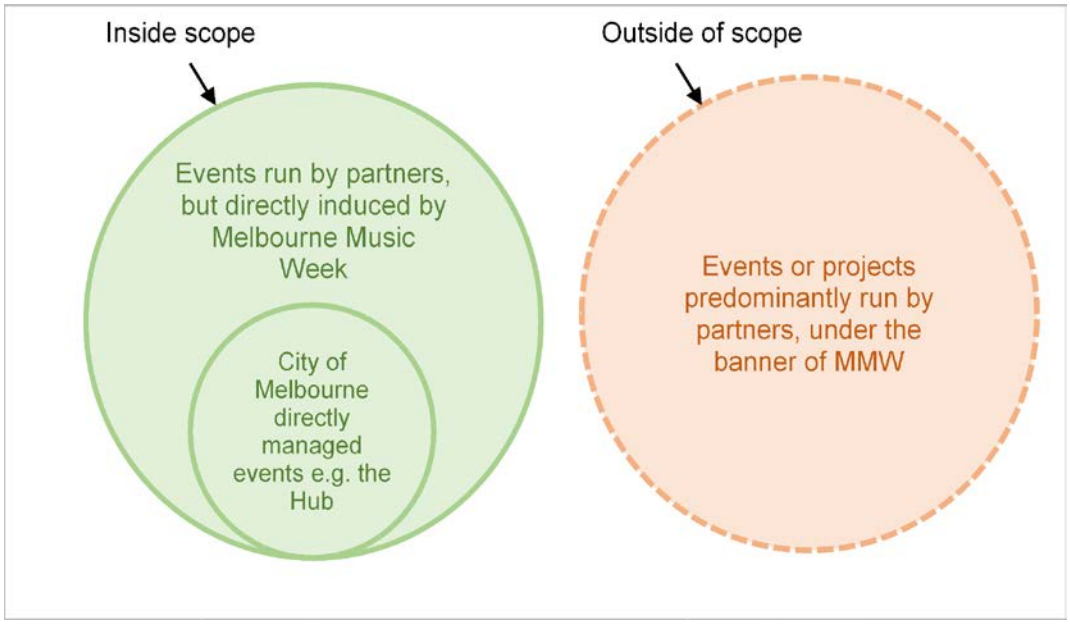
1. City of Melbourne directly manages event
2. Run by partner, but directly induced by City of Melbourne, Melbourne Music Week
3. Partner directly manages event, under the banner of Melbourne Music Week

Events that are classified as either classification 1 or 2, are included within the carbon footprint scope as represented in Figure 8 below. The rationale for excluding classification 3 events from the scope of the assessment is that those events would have:

- occurred or existed regardless of Melbourne Music Week and its program
- been event-managed and undertaken directly by established organisations or producers, with little City of Melbourne involvement, and
- operated solely as a partner, or under the banner of Melbourne Music Week for the reasons of coincidental timing, and shared focus or objectives.

Consistent with greenhouse gas methodologies, as City of Melbourne have limited operational control of the above events, these have been excluded from the carbon footprint scope.

Figure 8: City of Melbourne, Melbourne Music Week – Carbon Footprint Scope



2. Is the emission source deemed one of high-risk to City of Melbourne?

Emissions sources are deemed to be high risk if there is a high perceived risk to City of Melbourne's reputation as a result of the emissions source (for example, highly visible impact sources such as marketing materials, or diesel generators).

3. Is the emission source of particular value to the event stakeholders?

High value emissions sources are those that may align with values of particular stakeholders, for example saving water may be particularly important to some even though the associated emissions are relatively small. The assessment of each emissions source against this criterion was based on the judgement of the City of Melbourne event management team for Melbourne Music Week and guidance from Arup specialists.

4. Is the combined impact of the emission source significant in quantitative size?

The relative contribution of each emissions source to the overall Melbourne Music Week footprint was based on the preliminary inventory of estimated Melbourne Music Week 2018 emissions. The significance of each emissions source in terms of size was based on this assessment. The preliminary inventory is included in Appendix D which also outlines the results of the assessment against the other criteria outlined above.

3.3.2 Emissions inventory scope

The identified sources of emissions for Melbourne Music Week are summarised in Table 7 below. Immaterial emissions sources have been excluded from the scope of the inventory.

Greenhouse gas emissions considered include carbon dioxide (CO2), methane (CH4), nitrous oxide (N20), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3).

The following emissions sources have been included and are in Table 7.

Table 7: Emissions sources for Melbourne Music Week

1. City of Melbourne directly manages event

Source type	Emissions source	Included in scope	Scope category
Venue energy emissions	Diesel generators	Yes	1
Venue energy emissions	Gas usage	Yes	1
Venue energy emissions	Electricity usage	Yes	2
Event indirect emissions	Contractor vehicle use	No	1
Event indirect emissions	Portable toilet usage	No	3
Event indirect emissions	Food consumed by patrons	Yes	3
Event indirect emissions	Drink consumed by patrons	Yes	3
Event indirect emissions	Patron accommodation	No	3
Event indirect emissions	Patron transport	Yes	3
Event indirect emissions	Venue waste	Yes	3
Event indirect emissions	Marketing and publications	Yes	3
Event indirect emissions	Performer/staff accommodation	Yes	3
Event indirect emissions	Performer/staff flights	Yes	3
Event indirect emissions	Cleaning services	No	3
Event indirect emissions	IT services	No	3
Event indirect emissions	Telecommunication services	No	3
Venue construction	New construction materials	Yes	3

Source type	Emissions source	Included in scope	Scope category
impacts (Hub only)			
Venue construction impacts (Hub only)	Staging / equipment / lighting hire	No	3
Venue construction impacts (Hub only)	Diesel generators used during/for construction	Yes	3
Venue construction impacts (Hub only)	Fuel usage by construction contractors	No	3
Venue construction impacts (Hub only)	Construction waste	No	3
Warehouse emissions	Warehouse electricity usage	No	2

2. Run by partner, but directly induced by Melbourne Music Week

Source type	Emissions source	Included in scope	Scope category
Venue energy emissions	Diesel generators	Yes	1
Venue energy emissions	Electricity usage	Yes	2
Event indirect emissions	Food consumed by patrons	Yes	3
Event indirect emissions	Drink consumed by patrons	Yes	3
N/A	Patron accommodation	No	3
N/A	Patron transport	Yes	3
N/A	Venue waste	Yes	3

3. Partner directly manages event, under the banner of Melbourne Music Week

No emission sources in scope.

The following sources were excluded from the emissions boundary:

- Contractor vehicle use
- Portable toilet usage
- Patron accommodation
- Construction Waste
- Warehouse electricity usage
- Cleaning services
- Staging / equipment / lighting hire
- Fuel usage by construction contractors
- Telecommunication services
- IT services

These emissions sources were deemed immaterial because they represent a small proportion of the total emissions. The sum of these emissions on the total emissions amounts to an estimated 4.9% of the total carbon account lower than the 5% maximum as stated in the NCOS standards for events. These were also excluded because they are largely outside of City of Melbourne's control.

Additionally, other emissions associated with the event including pre-event planning and preparation, postage and freight and staff commuting are also excluded from the study. It was determined that City of Melbourne staff are chiefly responsible for these activities, and therefore these emissions are absorbed in the organisation's carbon neutrality certification.

3.3.3 Data collection

Data collection sheets will be provided to all venue operators and partner contractors to collect data relevant to the events operations. These will include energy use, diesel generators use, fuel consumption, food and beverage sales, waste disposal and construction materials utilised. For the transport data, surveys will be taken with a suitable sample of attendees to determine the use of transport methods to and from the event. To ensure compliance, data collection will be embedded into the agreement with contractors along with training of venue staff to ensure accuracy of data collection.

3.4 Melbourne Music Week 2018 Emissions Inventory

This section outlines the results of the pre-event emissions inventory analysis from Melbourne Music Week 2018. The analysis was conducted to predict emissions for the Hub, in-scope partner venues and out of scope events.

3.4.1 Out of scope emissions profile

The emissions from events that have were deemed outside the scope of the study were included at a high level. These events were determined as difficult to control due to third party organisations running the event independently from City of Melbourne (e.g. independent of support or funding), therefore data collection and a complete emissions profile would be difficult to acquire. To ensure Melbourne Music Week will be certified as carbon neutral, additional emissions associated with these events has been calculated to compensate for these events. Through discussions with Melbourne Music Week event organisers, it is predicted that these events would contribute an extra 20% of activities, equating to an additional 7,064 attendees (based on 35,319 total estimated attendees). Using the total predicted emissions per attendee of 8.08 kgCO_2-e, the additional emissions for out of scope events equates to a 57 tonnes CO_2-e for the event.

3.4.2 Carbon emissions profile

The total amount of predicted emissions to be created for Melbourne Music Week 2018 is 343.07 tonnes CO_2-e inclusive of the out of scope events. The emissions analysis outlined in the rest of the report will be based only on in-scope emissions. These emissions were estimated from Melbourne Music Week 2015 data and discussions with Melbourne Music Week 2018 organisers.

In-scope emissions is estimated to be 285.9 tonnes CO_2-e. The predicted emissions equate to 8.09 kgCO_2-e per attendee, or 32 tonnes CO_2-e per day. The expected greenhouse gas emissions results for the 2018 Melbourne Music Week are shown for each emission source type in Figure 9 and Figure 10 below. This shows that the majority emissions are from transport (56%) and catering (37%).

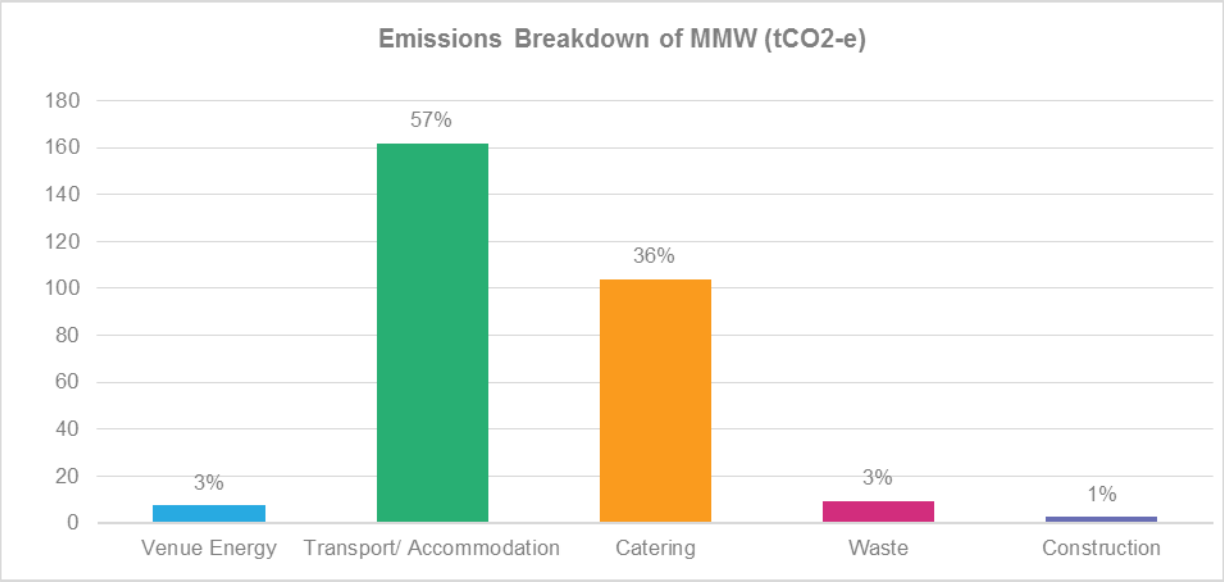
Figure 9: Total emissions profile for Melbourne Music Week 2018

- Venue energy emissions
  Utilities: 6,250 kg CO2-e
  Generators: 1,200 kg CO2-e
  Subtotal - venue energy emissions: 7.45 tonnes CO_2-e
- Transport emissions
  Flights: 66,066 kg CO2-e
  Group Transportation: 91,787 kg CO2-e

Accommodation: 4,060 kg CO2-e
Subtotal – Transport emissions: 161.91 tonnes CO_2-e

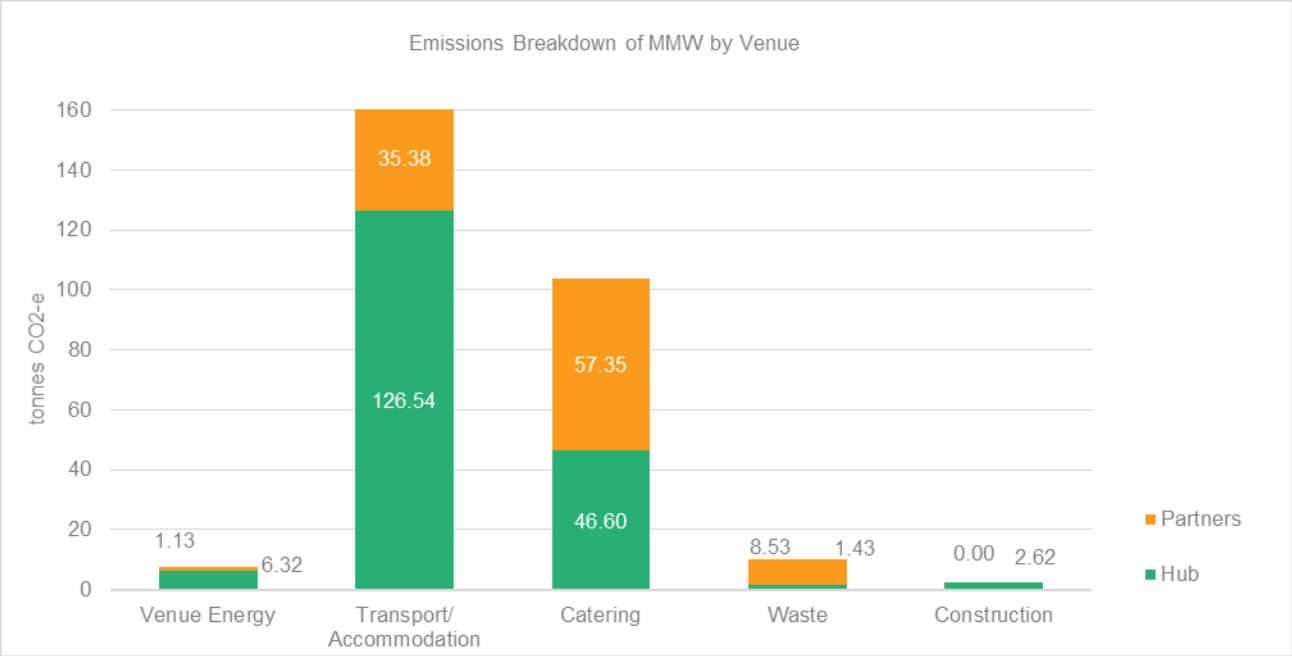
- Catering emissions
  Food: 38,518 kg CO2-e
  Drink: 65,432 kg CO2-e
  Subtotal – Catering emissions: 103.95 tonnes CO_2-e
- Waste emissions
  Utilities: 9,960 CO2-e
  Subtotal – water emissions: 9.96 tonnes CO_2-e
- Construction emissions
  Materials and activities: 2,619 kg CO_2-e
  Subtotal - construction emissions: 2.62 tonnes CO_2-e
- Total emissions at Melbourne Fashion Week: 285.9 tonnes CO_2-e

Figure 10: Anticipated emissions by source type at Melbourne Music Week 2018



Emission	tonnes CO2-e	%
Venue energy	7.45	3%
Transport/Accommodation	161.91	57%
Catering	103.95	36%
Waste	9.96	3%
Construction	2.62	1%
Total	285.89	N/A

Figure 11: Total Melbourne Music Week emissions, breakdown by venue



Hub Emissions

Emission type	tonnes CO2-e
Venue energy	6.32
Transport/Accommodation	126.54
Catering	46.6
Waste	1.43
Construction	2.62
Total	183.51

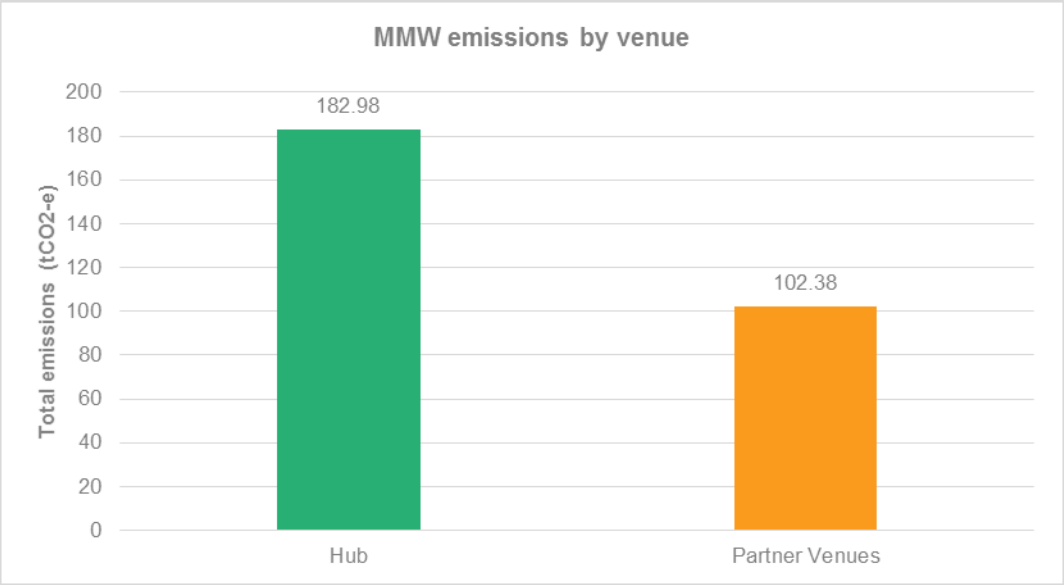
Partners' emissions

Emission type	tonnes CO2-e
Venue energy	1.13
Transport/Accommodation	35.38
Catering	57.35
Waste	8.53
Construction	0
Total	102.39

There are two main factors contributing to the larger projected emissions profile at the Hub:

- Larger transport emissions, as a number of artists performing at the Hub are from overseas and their flights are counted in the emissions inventory.
- The Hub historically attracts more patrons resulting in greater emissions from patron transport (estimated at 22,231 Hub patrons compared to 13,088 at in-scope partner venues).

Figure 12: Total emissions and emissions per attendee by venue (total emissions shown as bars with values on the left, emissions per attendee shown as dots with values on the right)



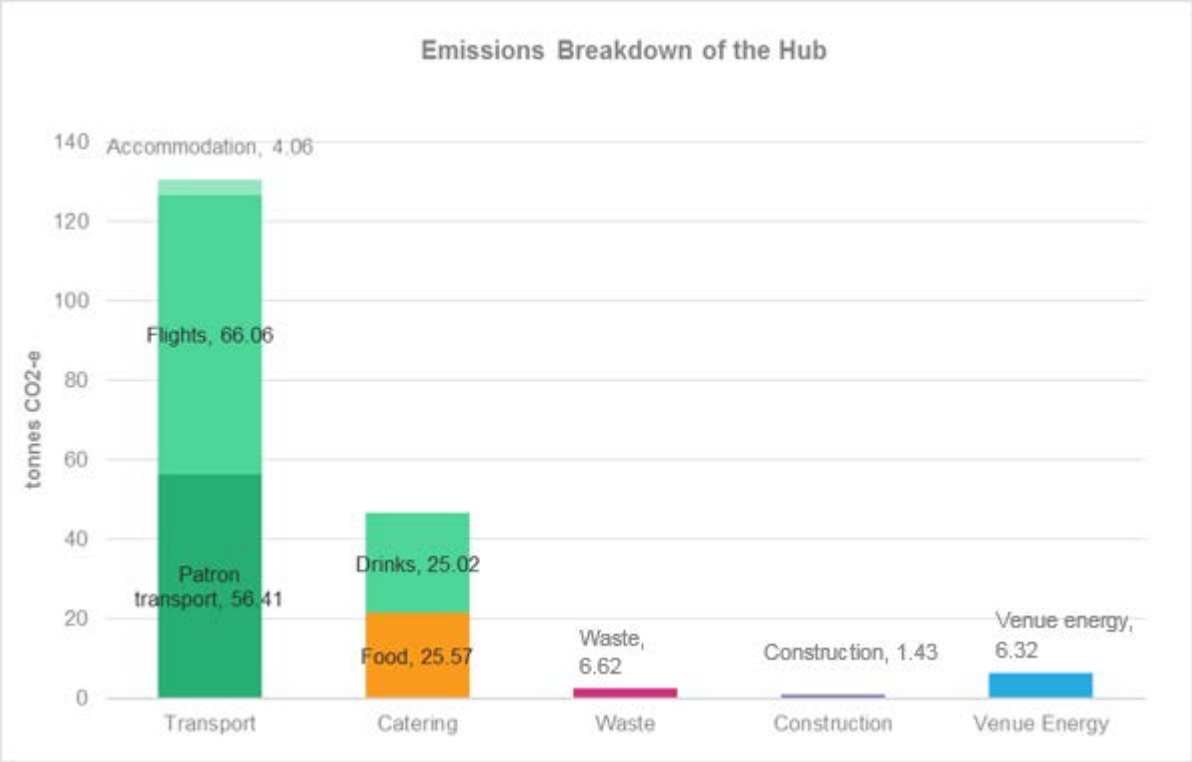
Venue	tonnes CO2-e	Patrons	kg CO2-e/patron
Hub	183.5	22,231.00	8.25
Partner venues	102.38	13,088.00	7.82

3.4.2.1 The Hub

The Hub is the flagship venue for Melbourne Music Week. The venue will host a line-up of both local and international headline acts.

A breakdown of greenhouse gas emissions from this venue are displayed in Figure 13 below. Transport (including flights and accommodation) and catering were the two biggest contributors to emissions and most of the energy was from mains electricity.

Figure 13: Predicted Melbourne Music Week 2018 Hub emissions



Emission Type	Category	Tonnes CO_2-e
Transport	Accommodation	4.06
Transport	Flights	66.06
Transport	Patron transport	56.41
Catering	Drinks	25.02
Food	Food	25.57
Waste	N/A	6.62
Construction	N/A	1.43
Venue energy	N/A	6.32

The key findings from the emissions analysis at the Hub are:

- We are anticipating 22,231 attendees at this venue (with a 5% increase in numbers considered for this analysis)
- Total greenhouse gas emissions are expected to be 183.5 tonnes CO_2-e, equating to emissions of approximately 8.25 kgCO_2-e per attendee.
- International and domestic flights are expected to make up 36% of the total Hub emissions.
- Greenhouse gas emissions predicted from food are anticipated to be 1 kg CO_2-e per attendee, and from drinks a similar figure of 1.1 kg CO_2-e per attendee.
- Waste production is projected to be 119g per attendee, comprised of 30g to landfill and 89g being recycled.
- Construction impacts including embodied emissions from construction materials and fuel consumption by construction vehicles are predicted to be 1.6% of the overall Hub emissions.

3.4.2.2 Partner venues

A number of events run by partner venues, but directly induced by Melbourne Music Week, were included in the emissions analysis. It is anticipated that there will be 20 partner venues included in the scope of the footprint.

As with the Hub, transport and catering were the two main emissions sources. A breakdown of greenhouse gas emissions from partner venues are displayed in Figure 14 below.

Figure 14: Melbourne Music Week 2018 Partner venue emissions

Emission Type	Category	Tonnes CO_2-e
Transport	N/A	35.38
Catering	Drinks	40.05
Catering	Food	16.94
Waste	N/A	8.53
Venue Energy	N/A	1.13

The key findings from the emissions analysis at partner venues are:

- It is anticipated that there will be approximately 13,088 attendees across 20 partner events.
- Total greenhouse gas emissions for all partner venues are expected to be 102.38 tonnes CO_2-e, equating to 7.82 kg CO_2-e per attendee.
- There are no emissions associated with flights or accommodation for artists performing at the partner venues.

3.4.3 Offsets summary

Eligible offsets purchased include:

- 344 tonnes of Australian Carbon Credit Units (ACCU) from a savannah burning project in Western Australia were ‘cancelled on behalf of City of Melbourne - Melbourne Music Week (16 – 24 November

2018) for its carbon neutral claim against the National Carbon Offset Standard' Clean Energy Regulator[9].

Registry: Australian National Registry of Emission Units.

Serial range: 3,758,601,529 – 3,758,601,872.

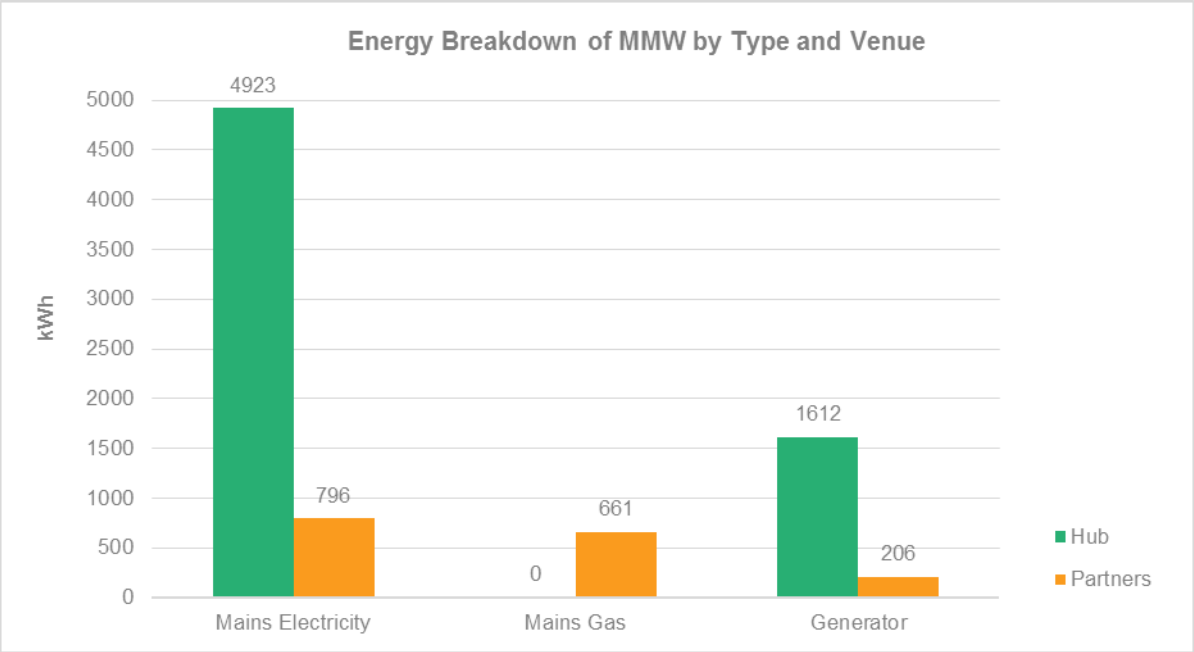
Emission Reduction Fund Project: EOP 100641.

Account holder: Tasman Environmental Markets Pty Ltd.

3.4.4 Energy

The total in-scope energy consumption at Melbourne Music Week is expected to be 8,199 kWh. It is expected that of the energy used at Melbourne Music Week 2018 approximately 80% of it will be at the Hub, while the other 20% will be at partner venues. The Hub also has a higher per attendee energy use. The larger expected size of the hub and longer operating hours will likely contribute to this higher energy consumptions.

Figure 15: Total energy consumption and energy consumption per attendee by venue (total energy shown as bars with values on the left, energy per attendee shown as dots with values on the right)

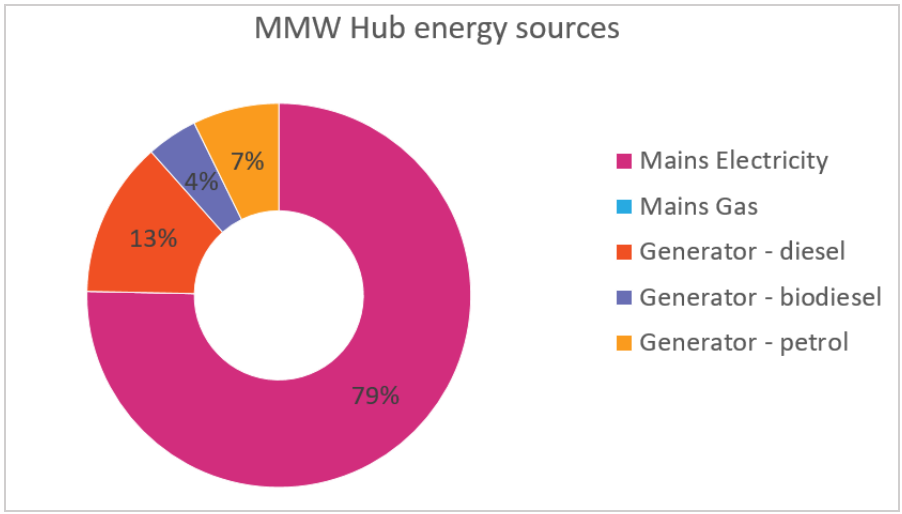


Venue	Mains Electricity (tonnes CO_2-e)	Mains Gas (tonnes CO_2-e)	Generator (tonnes CO_2-e)	Total (tonnes CO_2-e)
Hub	4923	0	1612	6535
Partners	796	661	206	1663

The expected breakdown by energy source is shown in Figure 16 and Figure 17 , below. At the Melbourne Music Week Hub most of the energy is predicted to be sourced from mains electricity (almost 80%), with the remainder produced by generators. We are projecting a variety of fuel sources might be used to power the generators, based on data collected from Melbourne Music Week 2015.

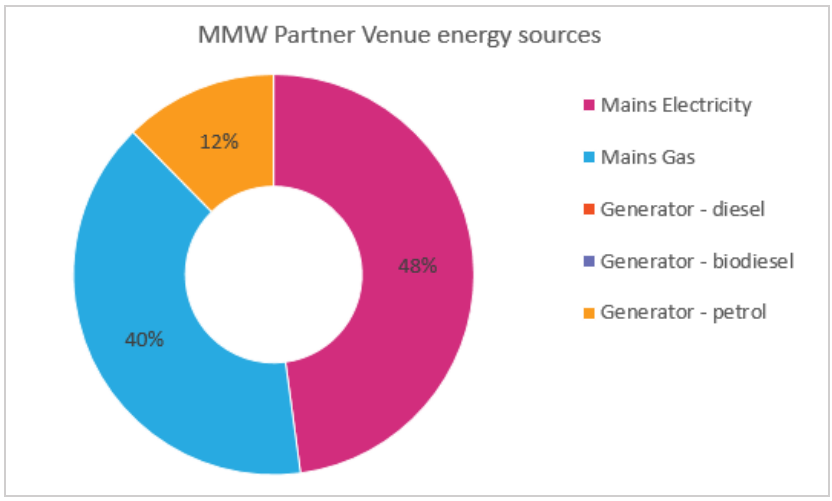
9 http://www.cleanenergyregulator.gov.au/OSR/ANREU/The-Australian-national-registry-of-emissions-units

Figure 16: Predicted energy use sources for the Hub for Melbourne Music Week 2018



Hub Venue Energy Source	% energy use
Mains Electricity	79%
Mains Gas	0%
Generator - diesel	13%
Generator - biodiesel	4%
Generator - petrol	7%

Figure 17: Predicted energy use sources for partner venues for Melbourne Music Week 2018



Partner Venue Energy Source	% energy use
Mains Electricity	48%
Mains Gas	40%
Generator - diesel	0%
Generator - biodiesel	0%
Generator - petrol	12%

3.4.5 Transport

3.4.5.1 Ground based transport

To predict the transport emissions for Melbourne Music Week 2018, the actual data collected during Melbourne Music Week 2015 was used. As the venues are in central and CBD locations, public transport (train, tram and bus) are expected to be the most commonly used modes of ground transport, accounting for 47% of total trips, as shown in Table 8. It should be noted that while public transport is less emissions intensive than other modes of transport such as taxi or private vehicle, there are still significant emissions associated with electricity use.

Table 8: Predicted Melbourne Music Week patron transport - trips, kilometres travelled and emissions by mode

Transport mode	Number of trips: Number	Number of trips: % by mode	Passenger kilometres travelled: Passenger kilometres	Passenger kilometres travelled: % by mode	Emissions: Emissions (tCO_2-e)	Emissions: % by mode
Train	5,518	16%	112,275	17.50%	17.93333	19.50%
Tram	10,590	30%	179,987	26%	32.15632	35%
Bus	512	1%	44,558	6.50%	7.575287	8%
Car, taxi, Uber	7,384	21%	159,382	23%	34.01149	37%
Bicycle	3,537	10%	20,228	3%	0	0%
Walk, skateboard	7,779	22%	163,685	24%	0	0%
Total	35,319	100%	680,115	100%	59.4	100%

Based on Melbourne Music Week 2015 data, the following assumptions were made:

The ground transport data was based on Melbourne Music Week attendee survey responses. The following assumptions were made to compile the transport profile:

- If multiple modes of transport were recorded, each was equally split by distance. Note that may cause an overestimate the kilometres attributable to walking, as it is likely that in a multi-mode trip, the attendee walk less distance than using other modes.
- The transport data was taken from attendee surveys for Melbourne Music Week. The numbers were pro-rated to determine the total travel distances using attendee numbers provided by City of Melbourne.

3.4.5.2 Flights and accommodation

Based on discussion with City of Melbourne, it is expected that 35 flights for artists and staff will be included in the scope of this assessment. Twenty of these flights are expected to be domestic and 15 international, totalling 66,066 kg CO_2-e. The emissions from flights are the single largest contribution to the overall emissions of the event representing 26.5% of total projected emissions.

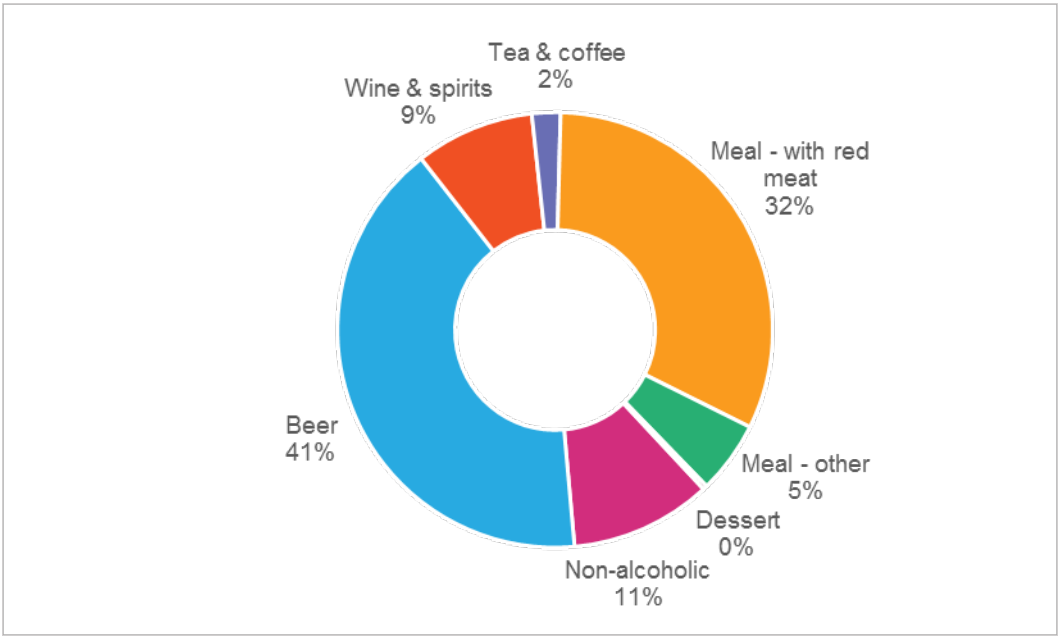
Accommodation for staff and artists have also been included in the emissions inventory. City of Melbourne indicated that they provided two nights of accommodation for all artists or staff flying to Melbourne for the event. The emissions for accommodation were calculated using data from Crown Melbourne 2016-17 Public

Disclosure Summary[10]. Data for the standard king room and twin room emissions of 0.058 tonnes CO_2-e, per night accommodation was used in the calculation of emissions. This data point was selected as it most closely reflected that for which City of Melbourne provides to artists and staff. Total predicted emissions associated with accommodation was determined to be 4.06 tonnes CO_2-e.

3.4.6 Catering

Catering is predicted to be a large contributor to the greenhouse gas emissions of Melbourne Music Week 2018, accounting for approximately 103.95 tonnes CO_2-e, or 36% of total emissions for the event. Based on previously collected data, red meat and beer are traditionally the largest contributor to emissions from catering. It is expected that catering for this year's Melbourne Music Week is likely to have a similar catering emissions profile as that of Melbourne Music Week 2015, as shown in Figure 18.

Figure 18: Emissions by food type and drink



Catering Emission	% Breakdown
Meal - with red meat	32%
Meal - other	5%
Dessert	0%
Non-alcoholic	11%
Beer	41%
Wine and spirits	9%
Tea & coffee	2%

3.4.7 Waste

It is expected that waste across all venues will be similar to that of Melbourne Music Week 2015, with waste to landfill contributing to 3% of total emissions, at 9.96 tonnes CO_2-e including marketing and publication materials. The emissions for those materials were calculated proportionately to attendance using data

[10] NCOS Carbon Neutral Public Disclose Summary – Crown Melbourne Limited July 2016 to June 2017- http://www.environment.gov.au/system/files/pages/098c4887-66c4-4c9e-a6d2-fe1551b49009/files/crown-pds-2016-17.pdf

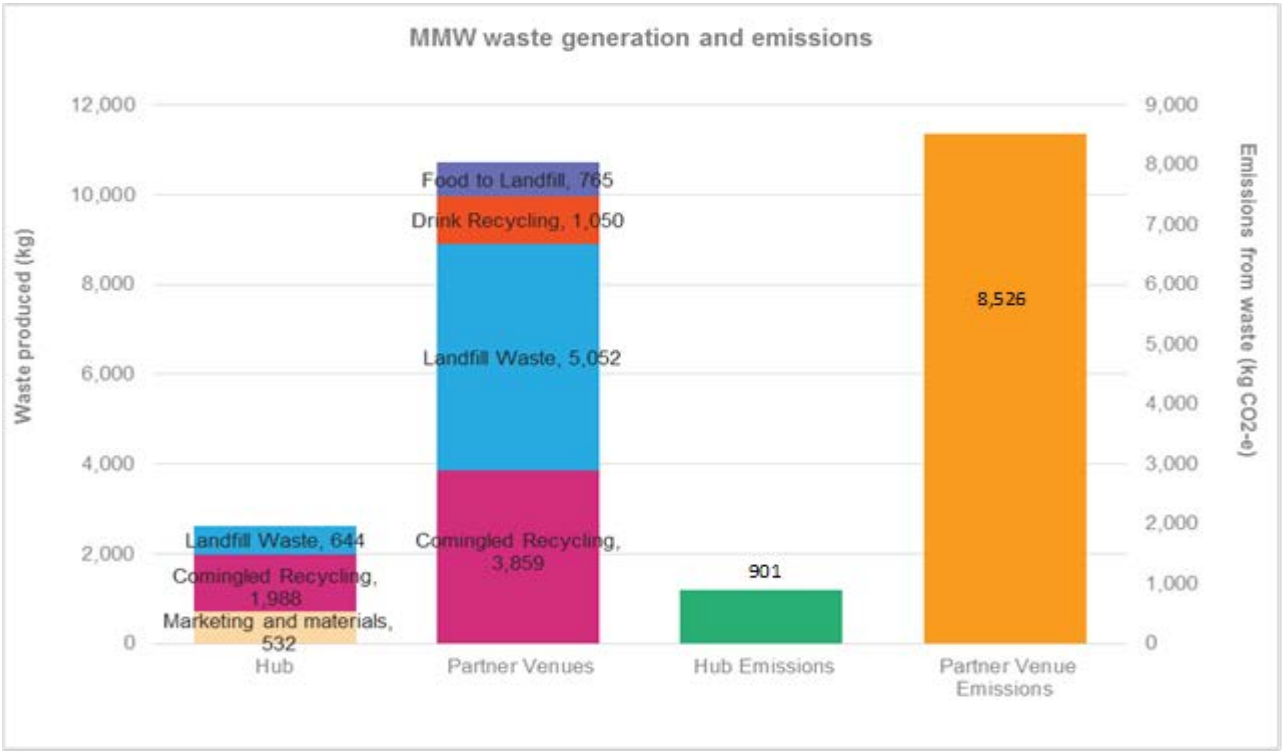
collected from Melbourne Knowledge Week 2018. It is expected that most waste will be generated at the partner venues.

The expected waste generation for Melbourne Music Week 2018 is summarised in Table 9 and Figure 19.

Table 9: Anticipated waste generation at Melbourne Music Week 2018

Waste stream	Melbourne Music Week Hub kg produced	Melbourne Music Week Hub % of waste	Partner venues kg produced	Partner venues % of waste
Landfill Waste	644	20%	5,052	47%
Comingled Recycling	1,988	63%	3,859	36%
Drink Recycling	0	0	1,050	10%
Food to Landfill	0	0	765	7%
Marketing and publication materials	532	17%	0	0%

Figure 19: Comparison of projected emissions and waste disposal by venue type (left – waste produced, right – emissions from waste)



Waste stream	Hub	Partners
Landfill Waste	644 kg	5052 kg
Comingled Recycling	1,988 kg	3859 kg
Drink Recycling	0 kg	1050 kg
Food to Landfill	0 kg	765 kg
Marketing and materials	532 kg	0 kg
Total emissions from waste	644 kh CO_2-e	8,526 kg CO_2-e

3.4.8 Construction

Melbourne Music Week 2018 will primarily utilise existing venues and therefore requiring little additional construction. In our greenhouse gas emissions estimates, we have allowed for the construction of structures as part of a hub facility utilising materials including plywood, pine, glue and vinyl. Emissions from these activities are anticipated to contribute only 1% of total emissions, at 2.62 tonnes CO_2-e.

3.5 Melbourne Music Week Recommendations to Reduce Emissions

3.5.1 Potential emissions reduction activities

We have identified sustainability initiatives that have the potential to reduce emissions for Melbourne Music Week 2018. These are based off recommendations that were outlined following Melbourne Music Week 2015, for future Melbourne Music Week implementation. If all identified sustainability initiatives were to be implemented, it would lead to:

- a 49% reduction in the overall Melbourne Music Week emissions footprint
- a 57% reduction in emissions from the Melbourne Music Week Hub
- a 35% reduction in emissions from in-scope partner events.

As City of Melbourne is directly responsible for events held at the Hub, there is a higher degree of control and potential for emission reduction initiative implementation. To achieve some of the easier emissions reductions, it is recommended that efforts are initially focused on the Hub.

The potential emissions reductions are outlined by emissions source and prioritised actions in Table 10 for the Hub and in-scope partner venues. Where there are multiple actions for one emissions source, the difference between the anticipated Melbourne Music Week 2018 emissions and ‘post action’ scenario is the cumulative impact of the actions. For further detail on action items and their emission reduction potential, see Appendix F.

Table 10: Potential emissions reductions by emission source

1. Hub emissions

Emissions source	Predicted 2018 emissions ($kgCO_2$-e)	Post action emissions profile ($kgCO_2$-e)	Action	Potential reduction in source emissions	Potential emissions reduction ($kgCO_2$-e)	Potential reduction in Melbourne Music Week emissions
Generators	Combined Generators 1,050	Combined Generators 3	Use appropriately sized generators	5%	52	0.0%
Generators	Combined Generators 1,050	Combined Generators 3	Use biodiesel	100%	994	0.3%
Electricity usage	Combined Electricity usage 5,268	Combined Electricity usage 0	Energy efficient sound equipment	2%	82.96	0.03%
Electricity usage	Combined Electricity usage 5,268	Combined Electricity usage 0	Use lights efficiently	5%	259.23	0.0%
Electricity usage	Combined Electricity usage 5,268	Combined Electricity usage 0	1.5 kW solar array	2%	99	0.1%
Electricity usage	Combined Electricity usage 5,268	Combined Electricity usage 0	LED Lights	13%	627	0.3%
Electricity usage	Combined Electricity usage 5,268	Combined Electricity usage 0	GreenPower	100%	4,199	1.5%
Food consumed by patrons	21,577	8,689	Replace red meat	60%	12,887	4.5%
Drink consumed by patrons	Combined drinks consumed by patrons 23,389	Combined drinks consumed by patrons 7,793	Less carbon intensive beer	50% 11	15,596	2.9%
Drink consumed by patrons	Combined drinks consumed by patrons 23,389	Combined drinks consumed by patrons 7,793	Source wine from carbon neutral suppliers	100%	4,596	1.6%
Patron transport	56,410	55,441	Incentivise public transport	2%	969	0.3%
Performer/ staff flights	66,066	0	Offset flights	100%	66,066	23.2%

11 Note: there are residual emissions in the beverages category, due to emissions from other beverage types.

Emissions source	Predicted 2018 emissions ($kgCO_2$-e)	Post action emissions profile ($kgCO_2$-e)	Action	Potential reduction in source emissions	Potential emissions reduction ($kgCO_2$-e)	Potential reduction in Melbourne Music Week emissions
Performer/ staff accommodation	4,060	0	Choose accommodation that offset their emissions (such as Crown Metropol)	100%	4,060	1.4%
Venue waste	901	820	Minimise disposable packaging	9%	81	0.0%
New construction materials	2,454	1,166	Use recycled material where possible	48%	1,289	0.5%
Overall	182,812	78,201	N/A	59%	104,611	36.7%

2. Partner venue emissions

Emissions source	Predicted 2018 emissions ($kgCO_2$-e)	Post action emissions profile ($kgCO_2$-e)	Action	Potential reduction in source emissions	Potential emissions reduction ($kgCO_2$-e)	Potential reduction in Melbourne Music Week emissions
Diesel generators	Combined generators 151	Combined generators 0	Appropriately size generators	5%	8	0.03%
Diesel generators	Combined generators 151	Combined generators 0	Use biodiesel	100%	142	0.0%
Electricity usage	Combined electricity usage 852	Combined electricity usage 0	LED lights	23%	194	0.1%
Electricity usage	Combined electricity usage 852	Combined electricity usage 0	Energy efficient sound equipment	2%	15	0.1%
Electricity usage	Combined electricity usage 852	Combined electricity usage 0	Use lights efficiently	5%	32	0.01%
Electricity usage	Combined electricity usage 852	Combined electricity usage 0	GreenPower	100%	611	0.2%
Food consumed by patrons	16,942	9,279	Replace red meat	45%	7,662	2.7%
Drink	Combined	Combined	Less carbon	65%	26,212	9.2%

Emissions source	Predicted 2018 emissions ($kgCO_2$-e)	Post action emissions profile ($kgCO_2$-e)	Action	Potential reduction in source emissions	Potential emissions reduction ($kgCO_2$-e)	Potential reduction in Melbourne Music Week emissions
consumed by patrons	drinks consumed by patrons 40,406	drinks consumed by patrons 9,445	intensive beer			
Drink consumed by patrons	Combined drinks consumed by patrons 40,406	Combined drinks consumed by patrons 9,445	Source wine from carbon neutral suppliers	100%	4,789	1.7%
Patron transport	35,377	28,668	Incentivise PT	19%	6,689	2.3%
Venue waste	Combined venue waste 8,526	Combined venue waste 4,552	Minimise disposable packaging	9%	767	0.3%
Venue waste	Combined venue waste 8,526	Combined venue waste 4,552	Encourage waste diversion	41%	3,207	1.1%
Overall	102,253	66,158	N/A	45%	36,095	12.6%
Melbourne Music Week Total	285,065	144,360	N/A	N/A	140,706	49%

3.5.2 Additional recommendations

There is additional scope to reduce emissions at partner venues, through the influence City of Melbourne has as the overall manager of Melbourne Music Week. City of Melbourne can promote sustainable options by:

- opting to partner with venues with sustainable credentials
- deliver education programs to City of Melbourne staff and partner organisations around sustainable event management
- providing information to partner venues on sustainable initiatives that could be implemented, for example, installing prominent recycling bins or purchasing renewable energy
- developing contract clauses for partners that ensure partners take steps to reduce emissions, for example, offsetting their own emissions in order to come under the banner of Melbourne Music Week.

3.6 Conclusion

By applying the recommendations identified in Section 5.1, it is possible for Melbourne Music Week 2018 to reduce their emissions by a total of 49%. or 140 tonnes CO_2-e. As City of Melbourne has greater control of events held at the Hub, it is expected that there would be a greater emissions reduction (57%) when compared to partner venues (35%). The main sources of emission reduction for the hub would be to offset the flights induced directly by the event. For partner venues, switching to lower carbon intensive beers has the greatest potential in reducing emissions.

Appendix A Materiality assessment and certification boundary

A.1 Diagram of certification boundary

Melbourne Fashion Week 2018

Inside Scope:

- Events directly managed by City of Melbourne:
  - Diesel generators (Scope 1)
  - Gas usage (Scope 1)
  - Electricity usage (Scope 2)
  - Food consumed by patrons (Scope 3)
  - Drinks consumed by patrons (Scope 3)
  - Patron transport (Scope 3)
  - Venue waste (Scope 3)
  - Marketing and publications (Scope 3)
  - Model/staff accommodation (Scope 3)
  - Model/ staff flights (Scope 3)
  - New construction materials (Scope 3)
  - Diesel generators used during/for construction (Scope 3)
- Events run by partners but directly induced by Melbourne Fashion Week
  - Diesel generators (Scope 1)
  - Gas usage (Scope 1)
  - Electricity usage (Scope 2)
  - Food consumed by patrons (Scope 3)
  - Drinks consumed by patrons (Scope 3)
  - Patron transport (Scope 3)
  - Venue waste (Scope 3)

Out of Scope:

Events or projects predominantly run by partners, under the banner of Melbourne Fashion Week

Excluded sources:

- Contractor vehicle use (not included in scope)
- Portable toilet usage (not included in scope)
- Patron accommodation (not included in scope)
- Cleaning services (not included in scope)
- IT services (not included in scope)
- Telecommunication services (not included in scope)
- Staging/ lighting hire/ equipment (not included in scope)
- Fuel usage by construction contractors (not included in scope)
- Construction waste (not included in scope)

- Warehouse electricity usage (not included in scope)

A.2 Materiality scorecard

1. City of Melbourne directly manages event

Source type	Emissions source	Materiality criteria: Risk identified by City of Melbourne	Materiality criteria: Importance to stakeholders	Materiality criteria: Size (% of emissions footprint)	Included in scope
Venue energy emissions	Diesel generators	Yes	High	4%	Yes
Venue energy emissions	Electricity usage	Yes	Medium	1%	Yes
Event indirect emissions	Contractor vehicle use	Yes	Low	0.2%	No
Event indirect emissions	Portable toilet usage	No	Low	0.0%	No
Event indirect emissions	Food consumed by patrons	Yes	Medium	13%	Yes
Event indirect emissions	Drink consumed by patrons	Yes	Medium	7%	Yes
Event indirect emissions	Patron accommodation	No	Low	0.4%	No
Event indirect emissions	Patron transport	Yes	High	16.7%	Yes
Event indirect emissions	Venue waste	No	High	0.0%	Yes
Event indirect emissions	Marketing and publications	Yes	Medium	0.1%	Yes
Event indirect emissions	Performer /staff accommodation	Yes	Low	0.1%	Yes
Event indirect emissions	Performer/staff flights	Yes	Medium	1%	Yes
Event indirect emissions	Cleaning services	No	Low	0.1 %	No
Event indirect emissions	IT services	No	Low	0.1 %	No
Event indirect emissions	Telecommunication services	No	Low	0.1 %	No
Venue construction impacts (Melbourne Town Hall only)	New construction materials	Yes	Medium	7%	Yes
Venue construction impacts (Melbourne Town Hall only)	Staging / equipment / lighting hire	No	Low	1%	No

Source type	Emissions source	Materiality criteria: Risk identified by City of Melbourne	Materiality criteria: Importance to stakeholders	Materiality criteria: Size (% of emissions footprint)	Included in scope
Venue construction impacts (Melbourne Town Hall only)	Diesel generators used during/for construction	Yes	Medium	5%	Yes
Venue construction impacts (Melbourne Town Hall only)	Fuel usage by construction contractors	Yes	Low	1%	No
Venue construction impacts (Melbourne Town Hall only)	Construction waste	No	Low	1%	No
Warehouse emissions	Warehouse electricity usage	No	Low	1%	No

2. Run by partner, but directly induced by Melbourne Fashion Week

Source type	Emissions source	Materiality criteria: Risk identified by City of Melbourne	Materiality criteria: Importance to stakeholders	Materiality criteria: Size (% of emissions footprint)	Included in scope
Venue energy emissions	Diesel generators	Yes	High	0.0%	Yes
Venue energy emissions	Electricity usage	Yes	Medium	4%	Yes
Event indirect emissions	Food consumed by patrons	No	Medium	13%	Yes
Event indirect emissions	Drink consumed by patrons	No	Low	11%	Yes
Event indirect emissions	Patron accommodation	No	Low	0.3%	No
Event indirect emissions	Patron transport	Yes	High	12%	Yes
Event indirect emissions	Venue waste	No	Medium	0.0%	Yes

3. Partner directly manages event, under the banner of Melbourne Fashion Week

No emission sources in scope.

Appendix B Emission factors

B.1 Emission factors

The data used for this pre-carbon assessment were multiplied by emissions factors to calculate the emissions footprint. The emissions factors used and their sources are outlined in Table 11.

Table 11: Emissions factors used to calculate Melbourne Fashion Week emissions profile

1. Utilities

Emission factor	Factor	Unit	Reference
Electricity from grid	1.08	$kgCO_2$-e/kWh	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 5.
Gas from grid	0.05	$kgCO_2$-e/MJ	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 2.
Water use[12]	0.15	$kgCO_2$-e/kL	Melbourne Water 2016-2017 Annual Report.

2. Generators

Emission factor	Factor	Unit	Reference
Diesel fuel	2.71	$kgCO_2$-e/L	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 3.
Biodiesel fuel	0.01	$kgCO_2$-e/L	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 3.
Petrol fuel	2.39	$kgCO_2$-e/L	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 3.

3. Waste

Emission factor	Factor	Unit	Reference
Landfill waste (MSW)	1.4	$kgCO_2$-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 44 Waste volumes converted using density data in EPA

[12] This is based on MMW2015 data where only three venues provided water data. This data did not provide a reliable representation of water consumption at MMW and so the water consumption footprint of MMW was not reported. However, using this emissions factor is was determine that the emissions resulting from water use are insignificant in comparison to other sources, for the venues where data was provided.

Emission factor	Factor	Unit	Reference
			Victoria, EREP training materials: Waste Densities Data
Commercial and industrial waste	1.2	kg CO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 42.
Construction and demolition waste	0.2	kg CO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 44.
Food waste to landfill	1.9	kgCO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 42.
Comingled recycling	0	kgCO_2-e/kg waste	Arup assumption.
Drink recycling (cans, bottles)	0	kgCO_2-e/kg waste	Arup assumption.
Food waste to compost	0	kgCO_2-e/kg waste	Arup assumption.

4. Catering

Emission factor	Factor	Unit	Reference
Non-alcoholic beverages	0.385	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.10.4.
Beer	0.182	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.11.5.
Wine & Spirits	0.113	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.11.5.
Tea & Coffee	1.25	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.10.4.
Meal - with red meat	2.11	kgCO_2-e/$	Composite factor – based on EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.1.3.
Meal - other	0.79	kgCO_2-e/$	Composite factor – based on EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.1.3.
Dessert	0.49	kgCO_2-e/$	Composite factor – based on EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.1.3.

5. Transport

Emission factor	Factor	Unit	Reference
Domestic flight	0.298	$kgCO_2e$- per passenger kilometre	DEFRA 2018 (value for average passenger, Domestic, to/from UK) UK Government emission conversion factors for greenhouse gas company reporting[13]
Short-haul flight	0.162	$kgCO_2e$- per passenger kilometre	DEFRA 2018 (value for average passenger, Short-haul, to/from UK).
International flight	0.182	$kgCO_2e$- per passenger kilometre	DEFRA 2018 (value for average passenger, International, to/from non-UK)
Train	0.15	$kgCO_2e$- per passenger kilometre	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Tram	0.179	$kgCO_2e$- per passenger kilometre	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Bus	0.171	$kgCO_2e$- per passenger kilometre	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Car, taxi, uber	0.213	$kgCO_2e$- per passenger kilometre	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Bicycle, walk, skateboard	0	$kgCO_2e$- per passenger kilometre	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.

6. Construction materials

Emission factor	Factor	Unit	Reference
Vinyl	2.41	$kgCO_2$-e/kg	SimaPro[14] (PVC, Polyvinyl Chloride/AU U).
Grout	0.656	$kgCO_2$-e/kg	SimaPro (Light mortar {GLO}, market for, Alloc Def, U).
Pine	0.807	$kgCO_2$-e/kg	SimaPro (Strutural pine, u=12%, at mill/AU U).
Plywood	2.25	$kgCO_2$-e/kg	SimaPro (Plywood, indoor use, at plant/AU U).
Paint	2.27	$kgCO_2$-e/kg	SimaPro (Alkyd paint, white, 60% in H2O, at plant/RER U).
PVA glue	3.36	$kgCO_2$-e/kg	AgriLink New Zealand EcoCover Report Section 5.2.3 (for PVAc 3370, 46% solids).
Acoustic polyester batts	4.09	$kgCO_2$-e/kg	SimaPro (Polystyrene foam slab {GLO}, market for, Alloc Def, U).
Mulch	0.583	$kgCO_2$-e/kg	SimaPro (Bark mulch, at oriented strand board production, US SE/kg/US).

13 http://www.ukconversionfactorscarbonsmart.co.uk/

14 SimaPro is a lifecycle assessment (LCA) software which calculates the embodied impacts of materials and processes.

B.2 Emissions summary

This section outlines the predicted emissions sources of Melbourne Fashion Week 2018.

Table 12: Melbourne Fashion Week 2018 emissions summary of the pre-event carbon account report

Scope	Emissions source	kg CO_2-e
1	Generators	8213
2	Electricity	13574.56
1	Gas	258.39
3	Water	18.22
3	Landfill waste	17256.41
3	Comingled	0.00
3	Drink recycling	0.00
3	Food to landfill	3167.93
3	Food to compost	0.00
3	Non-alcoholic	23473.27
3	Beer	91142.09
3	Wine & spirits	19716.78
3	Tea & coffee	4740.45
3	Meal - with red meat	71269.18
3	Meal - other	12024.20
3	Dessert	676.67
3	Domestic flights	82742.04
3	International flights	16209.51
3	Train	37714.74
3	Tram	67501.64
3	Bus	15963.78
3	Car/Taxi/Uber	71127.95
3	Bicycle	0.00
3	Walk	0.00
3	Skateboard	0.00
3	Guest Accommodation	4640.00
3	Marketing and publications	1115.26
3	New construction materials	2618.76

Scope	Emissions source	kg CO_2-e
1	Generators used during/ for construction	0
3	Out of scope emissions	84,607
N/A	Total gross emissions	649,940
N/A	GreenPower or retired LGCs	0
N/A	Total net emissions	649,940

Appendix C Reduction actions

C.1 Improved practice initiatives

The improved-practice Melbourne Fashion Week profile was calculated based on quantifiable emissions reduction initiatives. The assumptions used to calculate the impact of the best practice initiatives are outlined in Table 13.

Table 13: Improved practice initiatives

Action	Reduction	Assumption	Reference	National Carbon Offset Standards Certification
Appropriately size generators	5%	Assume reduction in generator energy consumption.	EE Music, Energy Efficiency and Renewable Energy Use for Festivals and Outdoor Events.	N/A
Use biodiesel	99%	Replace remaining diesel fuel with B100.	See emissions factors above	N/A
Energy efficient LEDs	2%	Energy efficient LED have the potential to reduce light related energy use by 65%	Arup energy audit for MRC – assume similar consumption profile	N/A
Use lights efficiently	5%	Based on delaying stage lighting use by 1 hour. Stage lighting energy use assumed to be 60% of venue electricity consumption based on energy audit undertaking by Arup of the Melbourne Recital Centre.	Arup energy audit for MRC – assume similar consumption profile	N/A
1.5 kW solar array	2%	Install 1.5kW array which has the potential to generate 81 kWh of electricity during Melbourne Fashion Week, reducing emissions by 86.7 $kgCO_2$-e, assuming it reduced grid electricity consumption.	PV Watts Calculator[15]	N/A
GreenPower	100%	Emissions are offset through purchase of GreenPower.	N/A	Can be carbon neutral certified if offsets are purchased through Energy Australia or Powershop.

[15] http://pvwatts.nrel.gov/

Action	Reduction	Assumption	Reference	National Carbon Offset Standards Certification
Replace red meat	60%	Dollars spent on red meat meals are assumed to be spent on non-red meat meals. Emissions calculated using relevant emissions factor (i.e. vegetarian based meals).	See emissions factors above	Can be carbon neutral if meals are replaced with sustainable seafood sourced from Austral Fisheries.
Less carbon intensive beer	67%	Emissions are reduced due to the supplier's carbon reducing activities in operations	Variety of beer suppliers with reduced emissions. ECOS magazine[16].	N/A
Carbon neutral wine	100%	Emissions are offset by wine supplier	N/A	Can be carbon neutral certified if supplied by Ross Hill Wine Group.
Incentivise PT	2%	Assume car trips less than 10km are instead taken by tram. Emissions calculated using relevant emissions factor.	See emissions factors above	N/A
Minimise disposable packaging	9%	Based on good practice achieved at FIFA World Cup.	Meegan Jones, 2014, Sustainable Event Management: A Practical Guide	N/A
Offset flights	100%	Emissions are offset through purchase of certified offsets.	N/A	Can be carbon neutral if offsets are purchased from Jetstar, Qantas, Tigerair Australia or Virgin Australia
Offset accommodation	100%	Emissions associated with accommodation can be offset through selecting carbon neutral hotels.	N/A	Crown Melbourne offers carbon neutral accommodation options for guests.

[16] http://www.ecosmagazine.com/?act=view_file&file_id=EC147p18.pdf

Appendix D Materiality assessment and certification boundary

D.1 Diagram of certification boundary

Melbourne Music Week 2018

Inside Scope:

- Events directly managed by City of Melbourne:
  - Diesel generators (Scope 1)
  - Gas usage (Scope 1)
  - Electricity usage (Scope 2)
  - Food consumed by patrons (Scope 3)
  - Drinks consumed by patrons (Scope 3)
  - Patron transport (Scope 3)
  - Venue waste (Scope 3)
  - Marketing and publications (Scope 3)
  - Performer/staff accommodation (Scope 3)
  - Performer/ staff flights (Scope 3)
  - New construction materials (Scope 3)
  - Diesel generators used during/for construction (Scope 30
- Events run by partners but directly induced by Melbourne Music Week
  - Diesel generators (Scope 1)
  - Gas usage (Scope 1)
  - Electricity usage (Scope 2)
  - Food consumed by patrons (Scope 3)
  - Drinks consumed by patrons (Scope 3)
  - Patron transport (Scope 3)
  - Venue waste (Scope 3)

Out of Scope:

Events or projects predominantly run by partners, under the banner of Melbourne Music Week

Excluded sources:

- Contractor vehicle use (not included in scope)
- Portable toilet usage (not included in scope)
- Patron accommodation (not included in scope)
- Cleaning services (not included in scope)
- IT services (not included in scope)
- Telecommunication services (not included in scope)
- Staging/ equipment / lighting hire (not included in scope)
- Fuel usage by construction contractors (not included in scope)
- Construction waste (not included in scope)
- Warehouse electricity usage (not included in scope)

D.2 Materiality Scorecard

1. City of Melbourne directly manages event

Source type	Emissions source	Materiality criteria Risk identified by City of Melbourne	Materiality criteria Importance to stakeholders	Materiality criteria Size (% of emissions footprint)	Included in scope
Venue energy emissions	Diesel generators	Yes	High	4%	Yes
Venue energy emissions	Electricity usage	Yes	Medium	1%	Yes
Event indirect emissions	Contractor vehicle use	Yes	Low	0.2%	No
Event indirect emissions	Portable toilet usage	No	Low	0.0%	No
Event indirect emissions	Food consumed by patrons	Yes	Medium	13%	Yes
Event indirect emissions	Drink consumed by patrons	Yes	Low	7%	Yes
Event indirect emissions	Patron accommodation	No	Low	0.4%	No
Event indirect emissions	Patron transport	Yes	High	16.7%	Yes
Event indirect emissions	Venue waste	No	High	0.0%	Yes
Event indirect emissions	Marketing and publications	Yes	Medium	0.1%	Yes
Event indirect emissions	Performer/staff accommodation	Yes	Low	0.1%	Yes
Event indirect emissions	Performer/staff flights	Yes	Medium	1%	Yes
Event indirect emissions	Cleaning services	No	Low	0.1 %	No
Event indirect emissions	IT services	No	Low	0.1 %	No
Event indirect emissions	Telecommunication services	No	Low	0.1 %	No
Venue construction impacts (Hub only)	New construction materials	Yes	Medium	7%	Yes

Source type	Emissions source	Materiality criteria Risk identified by City of Melbourne	Materiality criteria Importance to stakeholders	Materiality criteria Size (% of emissions footprint)	Included in scope
Venue construction impacts (Hub only)	Staging / equipment / lighting hire	No	Low	1%	No
Venue construction impacts (Hub only)	Diesel generators used during/for construction	Yes	Medium	5%	Yes
Venue construction impacts (Hub only)	Fuel usage by construction contractors	Yes	Low	1%	No
Venue construction impacts (Hub only)	Construction waste	No	Low	1%	No
Warehouse emissions	Warehouse electricity usage	No	Low	1%	No

2. Run by partner, but directly induced by Melbourne Music Week

Source type	Emissions source	Materiality criteria Risk identified by City of Melbourne	Materiality criteria Importance to stakeholders	Materiality criteria Size (% of emissions footprint)	Included in scope
Venue energy emissions	Diesel generators	Yes	High	0.0%	Yes
Venue energy emissions	Electricity usage	Yes	Medium	4%	Yes
Event indirect emissions	Food consumed by patrons	No	Medium	13%	Yes
Event indirect emissions	Drink consumed by patrons	No	Low	11%	Yes
Event indirect emissions	Patron accommodation	No	Low	0.3%	No
Event indirect emissions	Patron transport	Yes	High	12%	Yes
Event indirect emissions	Venue waste	No	Medium	0.0%	Yes

3. Partner directly manages event, under the banner of Melbourne Music Week

No emission sources in scope.

Appendix E Emission factors and summary

E.1 Emissions factors

The data used for this pre-carbon assessment were multiplied by emissions factors to calculate the emissions footprint. The emissions factors used and their sources are outlined in Table 14.

Table 14: Emissions factors used to calculate Melbourne Music Week emissions profile

1. Utilities

Emission factor	Factor	Unit	Reference
Electricity from grid	1.07	$kgCO_2$-e/kWh	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 5.
Gas from grid	0.05	$kgCO_2$-e/MJ	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 2.
Water use[17]	0.15	$kgCO_2$-e/kL	Melbourne Water 2016-2017 Annual Report.

2. Generators

Emission factor	Factor	Unit	Reference
Diesel fuel	2.71	$kgCO_2$-e/L	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 3.
Biodiesel fuel	0.01	$kgCO_2$-e/L	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 3.
Petrol fuel	2.39	$kgCO_2$-e/L	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 3.

[17] This is based on MMw2015 data where only three venues provided water data. This data did not provide a reliable representation of water consumption at MMW and so the water consumption footprint of MMW was not reported. However, using this emissions factor is was determine that the emissions resulting from water use are insignificant in comparison to other sources, for the venues where data was provided.

3. Waste

Emission factor	Factor	Unit	Reference
Landfill waste (MSW)	1.4	kgCO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 44. Waste volumes converted using density data in EPA Victoria, EREP training materials: Waste Densities Data.
Commercial and industrial waste	1.2	kg CO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 44.
Construction and demolition waste	0.2	kg CO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 43.
Food waste to landfill	1.9	kgCO_2-e/kg waste	Australian National Greenhouse Accounts Factors July 2018 - Australian Government Department of the Environment and Energy, Table 42.
Comingled recycling	0	kgCO_2-e/kg waste	Arup assumption.
Drink recycling (cans, bottles)	0	kgCO_2-e/kg waste	Arup assumption.
Food waste to compost	0	kgCO_2-e/kg waste	Arup assumption.

4. Catering

Emission factor	Factor	Unit	Reference
Non-alcoholic beverages	0.385	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.10.4
Beer	0.182	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.11.5
Wine & Spirits	0.113	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.11.5
Tea & Coffee	1.25	kgCO_2-e/$	EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.10.4
Meal - with red meat	2.11	kgCO_2-e/$	Composite factor – based on EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.1.3
Meal - other	0.79	kgCO_2-e/$	Composite factor – based on EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.1.3
Dessert	0.49	kgCO_2-e/$	Composite factor – based on EPA Victoria, Guide to Australian Greenhouse Calculator: Basic features, use and assumptions, Table 2.1.3

5. Transport

Emission factor	Factor	Unit	Reference
Domestic flight	0.298	kgCO2e-/passenger.km	DEFRA 2018 (value for average passenger, Domestic, to/from UK) UK Government emission conversion factors for greenhouse gas company reporting[18]
Short-haul flight	0.162	kgCO2e-/passenger.km	DEFRA 2018 (value for average passenger, Short-haul, to/from UK).
International flight	0.182	kgCO2e-/passenger.km	DEFRA 2018 (value for average passenger, International, to/from non-UK).
Train	0.15	kgCO2e-/passenger.km	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Tram	0.179	kgCO2e-/passenger.km	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Bus	0.171	kgCO2e-/passenger.km	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Car, taxi, uber	0.213	kgCO2e-/passenger.km	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.
Bicycle, walk, skateboard	0	kgCO2e-/passenger.km	EPA Victoria Greenhouse Inventory 2012-13 Update, page 28.

6. Construction materials

Emission factor	Factor	Unit	Reference
Vinyl	2.41	$kgCO_2$-e/kg	SimaPro[19] (PVC, Polyvinyl Chloride/AU U).
Grout	0.656	$kgCO_2$-e/kg	SimaPro (Light mortar {GLO}, market for, Alloc Def, U).
Pine	0.807	$kgCO_2$-e/kg	SimaPro (Strutural pine, u=12%, at mill/AU U).
Plywood	2.25	$kgCO_2$-e/kg	SimaPro (Plywood, indoor use, at plant/AU U).
Paint	2.27	$kgCO_2$-e/kg	SimaPro (Alkyd paint, white, 60% in H2O, at plant/RER U).
PVA glue	3.36	$kgCO_2$-e/kg	AgriLink New Zealand EcoCover Report Section 5.2.3 (for PVAc 3370, 46% solids).
Acoustic polyester batts	4.09	$kgCO_2$-e/kg	SimaPro (Polystyrene foam slab {GLO}, market for, Alloc Def, U).
Mulch	0.583	$kgCO_2$-e/kg	SimaPro (Bark mulch, at oriented strand board production, US SE/kg/US).

[18] http://www.ukconversionfactorscarbonsmart.co.uk/

[19] SimaPro is a lifecycle assessment (LCA) software which calculates the embodied impacts of materials and processes.

E.2 Emissions summary

This section outlines a summary of the predicted emissions sources from the Melbourne Music Week 2018.

Table 15: Melbourne Music Week 2018 Emissions summary of the pre-event carbon account report

Scope	Emissions source	kg CO_2-e
1	Diesel generators	1,200
2	Electricity	6,119.59
1	Gas	122.69
3	Water	7.79
3	Landfill waste	7,974.76
3	Comingled	0.00
3	Drink recycling	0.00
3	Food to landfill	1,453.18
3	Food to compost	0.00
3	Non-alcoholic	11,012.37
3	Beer	42,900.03
3	Wine & spirits	9,345.09
3	Tea & coffee	2,174.52
3	Meal - with red meat	32,692.28
3	Meal - other	5,515.69
3	Dessert	310.40
3	Domestic Flights	12,499.61
3	International Flights	53,566.23
3	Train	18,000.83
3	Tram	32,217.79
3	Bus	7,619.34
3	Car/Taxi/Uber	33,948.59
3	Bicycle	0.00
3	Walk	0.00
3	Skateboard	0.00
3	Guest Accommodation	4,060.00
3	Marketing and publications	532.3
3	New construction materials	2,618.76
1	Generators used during/ for construction	0
3	Out of scope emissions	57,072
N/A	Total gross emissions	343,071
N/A	GreenPower or retired LGCs	0
N/A	Total net emissions	343,071

Appendix F Improved practice initiatives

F.1 Improved practice initiatives

The improved-practice Melbourne Music Week profile was calculated based on quantifiable emissions reduction initiatives. The assumptions used to calculate the impact of the best practice initiatives are outlined in Table 16.

Table 16: Action reduction initiatives

Action	Reduction	Assumption	Reference	National Carbon Offset Standards Certification
Appropriately size generators	5%	Assume reduction in generator energy consumption.	EE Music, Energy Efficiency and Renewable Energy Use for Festivals and Outdoor Events	N/A
Use biodiesel	100%	Replace remaining diesel fuel with B100.	See emissions factors above	N/A
Energy efficient sound equipment	2%	Assume 15% reduction in audio equipment energy use. Audio equipment energy use assumed to be 10% of overall venue energy consumption based on energy audit undertaking by Arup of the Melbourne Recital Centre.	Arup energy audit for MRC – assume similar consumption profile	N/A
Use lights efficiently	5%	Based on delaying stage lighting use by 1 hour. Stage lighting energy use assumed to be 60% of venue electricity consumption based on energy audit undertaking by Arup of the Melbourne Recital Centre.	Arup energy audit for MRC – assume similar consumption profile	N/A
LED Lights	13%	Energy efficient LED have the potential to reduce light related energy use by 65%	Arup energy audit for MRC – assume similar consumption profile	N/A
1.5 kW solar array	2%	Install 1.5kW array which has the potential to generate 71.1 kWh of electricity during Melbourne Music Week, reducing emissions by 80.4 $kgCO_2$-e, assuming it reduced grid electricity consumption.	PV Watts Calculator[20]	N/A
GreenPower	100%	Emissions are offset through purchase of GreenPower.	N/A	GreenPower offsets could be purchased by Powershop or Real Utilities.

[20] http://pvwatts.nrel.gov/

Action	Reduction	Assumption	Reference	National Carbon Offset Standards Certification
Replace red meat	60%	Dollars spent on red meat meals are assumed to be spent on non-red meat meals. Emissions calculated using relevant emissions factor (i.e. vegetarian based meals).	See emissions factors above	There could be potential for further emission reductions using seafood sourced from Austral Fisheries, a carbon neutral supplier.
Less carbon intensive beer	67%	Emissions are reduced by a less carbon intensive supplier.	Variety of beer suppliers with reduced emissions. ECOS magazine[21].	N/A
Carbon neutral wine	100%	Emissions are offset by wine supplier	N/A	Can be carbon neutral certified if supplied by Ross Hill Wine Group.
Incentivise PT	2%	Assume car trips less than 10km are instead taken by tram. Emissions calculated using relevant emissions factor.	See emissions factors above	N/A
Minimise disposable packaging	9%	Based on good practice achieved at FIFA World Cup.	Meegan Jones, 2014, Sustainable Event Management: A Practical Guide	N/A
Offset flights	100%	Emissions are offset through purchase of certified offsets.	N/A	Offset flights via Jetstar, Qantas, Tigerair or Virgin Australia.
Certified patron accommodation	100%	Choose certified accommodation that offset their emissions	N/A	Crown Melbourne as potential accommodation
Use recycled construction materials	48%	Variable depending on which material can be sourced from sustainable/ recycled methods.	N/A	N/A

[21] http://www.ecosmagazine.com/?act=view_file&file_id=EC147p18.pdf