YourMelbourne 2023

Bringing people closer - to each other, and to nature.

Ashlesha Balyan



Acknowledgement of Country



"I acknowledge and pay my respects to the traditional custodians of this land, the Wurundjuri people of the Kulin Nation.

I pay my respects to the elders, past and present, and recognise their enduring connection to this land."



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Part 1: A Trip to Melbourne

CITY CIRCLE



Melbourne - Living on the Edge

Ranking as the most livability city in the world is a former glory the city still basks in. However, it is crucial to incentivise Melbourne's humans to make conscious choices to achieve long-term sustainability.

Fun fact about the city- Melbourne has the largest tram network in the world, spanning 250 kilometres of track. While a tremendous logistical achievement, 85% of trips to the city are still made by car [1]. The CBD has the highest amenities (offices, shopping, entertainment), yet an increasing number of homes are being bought in the suburbs with reduced access to education, healthcare, and even cell phone connectivity [2].

These facts are a meek representation of a plethora of inconsistencies in human behaviour in the city, bringing humans at odds with each other (for example, by becoming less considerate of the needs of other humans), and at odds with nature (by taking actions that increase their convenience but hurt the environment).

For Melbourne to become truly sustainable, Melbourne's humans ought to become more incentivised to work with each other and with nature to increase mobility, connectivity, and livability. Live Melbourne buckets the core issue of human behaviour into distinct impacts it creates and suggests solutions that would increase the ease of choosing sustainable action. This entails a host of solutions that reduce pressure on environmental sources due to urban sprawl, clubbed within the core idea of 'Melbourne Blocks' - developed with the aim of bringing society closer to each other, and closer to nature.

The solution is expected to create a city that would increase access to a more equitable quality of life for its diverse residents, making Melbourne not only more livable but also more inclusive through urban planning.



The city has prematurely surpassed its forecast population for 2030 already, thus creating intense pressure on natural and man-made resources.

The CBD and the inner city are struggling to keep up with the demands of an increasing and diverse population. Reduced levels of convenience, safety, and livability are incentivising people to move towards the fringe. 50 suburbs have been added to Melbourne's fringe since 2006. The question is: where does the sprawl stop?



Non-inclusive tram network

Approximately 8% of Melburnians experience disability, a staggering 400,000 people. While the city boasts 1700 tram stops spanning multiple suburbs, and the largest tram network in the world [1], only 27% of stops are disability-friendly.

Only 38% of trams in the city have low floors that make boarding a tram easier (provided it stops at a level tram stop), and only 15% of services have trams with low floors. [3]

The non-inclusive tram and stop design has left a host of disabled people out of access to public transport, thus denying them cheap and convenient mobility options.

Furthermore, people on crowded tram stops often fail to give consideration to disabled people, which further hampers the divide of accessibility in public transport.





Image Source: The Sydney Morning Herald [4]



Image Source: Daniel Bowen [5]

CBD-centric public transport doesn't work for all

Only 25% of Melbourne's 5 million population is currently serviced by trams. [6]

Rapid development away from the city and towards the fringe has contributed to this, as public transport infrastructure plays catch up with the new suburbs being built at a rapid rate - over 50 new suburbs have been added to the city's fringe since 2006.

This has been incentivising people to drive down to access facilities in middle and inner city suburbs, as well as the CBD, thus increasing congestion on the roads.



Image Source: Domain [7]

Mobility

Exclusionary stop locations and obstructing tram lines

Melbourne's tram lines and stops are often placed smack in the middle of the roads. This results in trams not only obstructing traffic flow, but also increasing safety hazards as passengers are forced to cross roads while hoping traffic stops. Often traffic fails to stop.

Furthermore, sharing the roads with other vehicles means trams are often subject to both generic traffic signals, tram signals, and also halting at stops. This slows down the journey time for tram passengers considerably when compared to cars.

Since accessibility is inconvenient and hazardous, and journey time multifold compared to using a car, people often avoid using public transport for commuting.





Image Source: The Age (8)

Image Source: Wongm's Rail Gallery [9]

Lack of internet and service at the fringe and in public housing

Newer suburbs closer to the fringe, such as Clyde North, are suffering from an extreme dearth of internet access and mobile service, with people having to travel by car to make a phone call [2].

Residents of public housing estates — Carlton housing estate for instance — find it hard to access reliable and affordable internet [10]. In today's information age, this translates to increasing digital inequality.

Developers and planners do not priortise telecommunications as an essential service like water, sewage, and electricity, and the growing number of townhouses and villas come without fibre optic installed. Traditional cell towers are also not sustainably designed.



Image Source: 9Now [2]

Limited space in the city due to rising traffic levels

The city and inner suburbs are succumbing under pressures from a rising population that increasingly prefers car travel over public and active transport. Since the city does not limit car traffic in certain areas, 70% space on roads is taken up by motorised vehicles [11].

Due to this, limited space is available for people to walk, cycle, and use e-bikes safely in the city. Efficiency and speed of public transport also slows down, and limited space remains for developing tree cover and shade for cooling.





Image Source: The Age [12]

Image Source: Domain [13]

Lack of affordable housing in the CBD and inner suburbs

Rising demand for accommodation and residential infrastructure that has yet to catch up is incentivising housing developers to build projects towards the city's fringe [14].

However, the highest number of facilities and services are available in the inner city, and accessibility is better compared to outer and new suburbs. In fact, the fringe often lacks access to basic healthcare and education - such as schools and hospitals [15].

Commute at the fringe is thus increasingly car dependant, and with public transport projects taking years of approval and development, the problem would take decades to alleviate.





Image Source: OpenLot [16]

Expansion of the fringe threatening natural and man-made resources

As people migrate away from the city in newly established suburbs, they not only encroach upon habitats of native wildlife on land, but also cause direct harm to them via their pets - specifically cats.

Approximately 55 pet cats per square kilometre live per suburb, and two-thirds roam freely. Each cat kills approximately 40 native reptiles, 38 native birds, and 32 native mammals per year, thus harming natural biodiversity [17].

Furthermore, as suburbs expand, human settlements around protected water catchments increase. This further raises the risk of groundwater contamination through human and animal activity, such as of E.Coli. [18]





Image Source: The Conversation [17]

Image Source: Google Maps

Heat island effect in city and inner suburbs due to reduced tree cover

Over the next few years, Melbourne's temperatures are expected to rise while rainfall levels reduce. As urban infrastructure and develops leaves less space for greenery, temperatures in the city further increase, thus raising the risk of diminishing water availability. [19]

Furthermore, the heat island effect contributes to drying up of soil and increases erosion. As soil dries up, building foundations weaken, thus raising the risk of infrastructure collapse in the future. [19]





Image Source: City of Melbourne [19]

Thermal imaging - Melbourne central city

Image Source: City of Melbourne [19]

Part 3: The Solution



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Collective Hubs

In order to achieve long-term sustainability and reduce pressure on people and the environment, Melbourne will be a mid-rise city in 2030. Collective Hubs, which will be developed in inner and middle suburbs, will be spaces of enhanced inclusivity and accessibility - bringing people closer to each other, and to nature.

The solution combines two interconnected dimensions -'The Hub' and 'Beyond the Hub', and encompasses all 17 UN Sustainable Development Goals.

This report dives deep into the planning and visualisation of a sample hub along Sydney Road in Brunswick, with Tram Route 19 improving accessibility.



NO Poverty

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5 GENDER EQUALITY



Current layout of Barkly Street, Brunswick

Brunswick Campus

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Google

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O 100% Imagery date: 12/2/21

Guardian Childcare & Education Brunswick...

Randazzo Park

3D

49 m

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Guardian Childcare & Education Brunswick.

Car/bus use roads - periphery

Tram Route 19

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'Motor-free' walkways

New inclusive blocks

Multi-level parking + bike rental

Current Layout

Brunswick Northside Boulders

Brunswick Station Books Fridge Urban Athletic

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Guardian Childcare & Education Brunswick...

Randazzo Park

2D

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3D Visualisation - Collective Hub

'Harmony' blocks will be developed in redundant areas, such as car parks, and vacant lots to create affordable housing, proximate offices, and accessible essential amenities

Smart parking lots: 20 x 30 x 50m lots will cater to offices and residences in the 450m x 350m hub, freeing up space within the hub

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Google

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vick Station 📻 ks Fridge

Imagery date: 12/2/21 Google Data SIO, NOAA, U.S. Navy, NGA, GEBCO Landsat / Copernicus 0 100%

Guardian Childcare & Education Brunswick.

ndazzo Park

Solar panels and rooftop wind turbines would harness Melbourne's strengths - wind and sunshine - to generate renewable energy that would make the hub sustainable.

Motor-free and green walkways

This energy would be stored as chemical energy in repurposed **BMW EV batteries or fuels (like** hydrogen) to meet peak demand,

Part I - The Hub

Smart parking lot

Mobility

Urban Planning

Sustainability

The multi-level parking lot would be built in a corner along the edge of a Collective Hub, and would meet the parking needs of people who wish to commute to a distant place.

The lot would make parking lot and street parking redundant. More space on the streets within each square means more walking, biking, or using mobility scooters.

The lowest floor of the lot would feature a free bike rental system with storage that would enable people to transport goods easily to and from their homes or offices.

Since the maximum walking/riding distance from the lot to any given point in the Hub is 570m, a maximum 8-minute walk would suffice without fatiguing the resident.





Nini Jako

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[9]

💋 Google



Rooftop turbines, solar panels, and energy storage to power the lot sustainably

> Partnership with BMW to install IoTenabled parking & charging infrastructure for autonomous vehicles.

IoT sensors to enable autonomous valet.

Smart elevator to transport EVs from one level to another.

Hydrogen fuel cell and BMW Wallbox plus charging stations made from recyled EV copper wiring.

((•))

Green belts for water recharge and reduced heat island effect

CNA896

((•))



Ramp in addition to elevator to tackle elevator problems that may arise

By 2030

Free bike rentals with storage located on ground floor for greater accessibility















Part I - The Hub

Harmony Blocks

Mobility

Connectivity

Urban Planning

Sustainability

Optimising parking in the square using mobility hubs would reclaim land from cars and give it back to the people.

Redundant parking lots would make space for high-density lowrise buildings — which have the lowest carbon life cycle when compared to high density high-rise scenario [21].

The Harmony Block: inclusive and sustainable by design

- **Ground Level:** The iconic Australian corner stores, clinics, childcare centres, local entertainment (cafes/pubs)
- Level 1 & 2: Office spaces
- Level 3 & 4: Residences
- **Roof:** Solar rooftop and noiseless turbines







2D

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Affordable apartments equipped with preinstalled high-speed NBN

GROCERIES

Office spaces built on the second floor of the Hub

Vegetable gardens on each level of the Hub

Essential amenities on the ground floor to improve access

Gardens for recreational activities and environmental learning for children in the Hub's daycare

Greater walking space and safer private mobility

CLINIC

By 2030

Rooftop turbines and solar panels to power the hub sustainably

Camera: 48 m

2D





Part I - The Hub

Motor-free walkways and green belts

Mobility

Urban Planning

Sustainability

Without on-street parking and thoroughfare, streets of the square will free up for local residents. These walkways will be a safe space to walk, jog, cycle to run errands and unwind.

A green belt along the walkways would increase water recharge and canopy cover — bringing down temperatures, improving air quality, and helping local bird and insect population thrive.

Conventional street lighting with high shade trees raises security concerns due to dark spots on the street. Rooftop solar-powered lamps at the ground level are an energyefficient solution to enhance sense of safety.





Green lamps placed underneath trees create bright spaces without creating dark spots, thus creating safer spaces for women and fostering inclusivity Green belts with increased canopies reduce heat island effect, recharge underground water tables, and help tackle the city's aging tree population



Car-free zones free up space for safer walking and recreational activity

Camera: 47 m





Walking and cycling friendly neighbourhoods



Ground level lights for improved safety



Reduced car trips + green belts



Thriving bird & insect populations



Healthy & happy Melburnians



Car-free tram zones with accessibility upgrades

Mobility

Urban Planning

Sustainability

The squares will be disability and elderly friendly zones that increase public transport adoption.

With the absence of dozens of cars waiting behind the tram, people with special needs can board/ deboard with a peace of mind.

Gentle ramps at the square station will improve access for wheelchair users and the elderly. A car-free environment will reduce hazards for people with visual, learning and hearing impairment.







Present Day

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Safer boarding of trams without having to cross busy streets



Gentle ramps improve accessibility.





Reduced hazards and stress for disabled people.



Higher workplace participation due to improved mobility.



Accessible infrastructure for all.





Lower emissions due to high PT adoption.

Part II - Beyond the Hub

Saving flora, fauna, and the 'fringe'

6 CLEAN WATER AND SANITATION



As the expansion of the fringe comes to a gradual halt with Melbourne's vertical growth through mid-rise Harmony Blocks, dense populations surrounding protected water catchments would dramatically fall. This would help ensure the risks of contamination of water due to human activity - such as from runoff from chicken pens toward the catchments due to rain - would fall dramatically, enabling access to clean and sanitary water.



As the number of people in outer suburbs fall and contamination risks decrease, aquatic life would be better preserved from illnesses and death due to potential heat island effects in these new suburbs in the future. Furthermore, as the number of pet-owning family and individual units fall, reptilian, amphibian, and aquatic life would be better protected from predators like free-roaming cats.



With falling number of domestic pets in the outer suburbs, small mammals and rodents, who play a vital role in controlling pest and insect populations, would be preserved. This includes native and migratory birds, small possums, baby wallabies, joeys, and fox cubs. Furthermore, as industrial development comes to a stop, felling of native trees and shrubbery would be avoided, and the natural flora would thrive.

Part II - Beyond the Square

One-way CBD and clean energy roofs





Part II - Beyond the Hub

One-way CBD and clean energy roofs



The CBD has some of the tallest buildings in Melbourne, which means the fastest wind cuts through the top of these skyscrapers. This presents an excellent opportunity to install similar rooftop windmills as recommended in Brunswick Square, thus harbouring renewable energy. In addition to this, solar panels and wastewater management systems will also be installed to restore water levels under the concretised city.



As previously highlighted in the report, a recurring problem facing users of public transport is accessing stops in the middle of the roads. Crossing busy roads is even more hazardous for disabled people. As one-way routes are created in the CBD, tram lines can be moved to an edge of the road, and accessible rampways for trams can be created.



As one-way streets free up spacein the city, an opportunity to build green belts similar to those built in the collective hub materialises. Since the CBD suffers with the highest levels of heat island effect in Melbourne (City of Melbourne), increasing canopy and shade would help cool the district.

Part 4: The Dream

35





2,000 m



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