AUTOMATED AND ZERO EMISSION VEHICLES

HOW THEY MIGHT RESHAPE OUR STREETS

urbancircus

ETHOS URBAN


STURT ST
BALLARAT
WATERGARDENS
TAYLORS LAKES
RINGWOOD
STATION
SIMPSON ST
YARRAVILLE
CHAPEL ST
SOUTH YARRA
MONASH
FREEWAY
NSW
SA
VIC

PROJECT BACKGROUND

In response to a request from the Special Minister of State, Infrastructure Victoria is providing advice on the potential infrastructure and land use planning requirements and opportunities to enable the operation of highly automated and zero emission vehicles. Infrastructure Victoria have commissioned a suite of integrated studies that are considering how to maximise benefits to society and avoid obsolescence of infrastructure investment. This report summarises the outcomes of one of these studies, undertaken by Urban Circus (visualisation) with Ethos Urban (urban design).

The emergence of Automated Vehicles and Zero Emission Vehicles (AVZEV) is likely to have significant impacts on the design of streetscapes, transport hubs and freeways, through changes to requirements for signage and signalling, road space allocation, parking, pick-up and drop-off areas, intersections, and interaction with non-automated road users (pedestrians and cyclists in particular). Considering and illustrating these changes is an important element in the consideration of the potential benefits and risks associated with the introduction of AVZEV technologies.

The impacts of AVZEV on the design of streetscapes will vary from one location to another, with the inner city raising somewhat different issues to suburban or regional centres, and local streets differing from transport hubs and highways. For this reason, the study illustrates six locations (indicated on the attached map):

- Inner City – ***Chapel Street, South Yarra***
- Suburban Centre – ***Watergardens, Taylors Lakes***
- Regional Centre – ***Sturt Street, Ballarat***
- Local Street – ***Simpson Street, Yarraville***
- Transport Hub – ***Ringwood Station***
- Highway – ***Monash Freeway***

The degree and nature of technological take-up is also a variable factor. While there are differences in urban amenity between battery electric or hydrogen fuel cell vehicles, and the continued presence of fossil fuel vehicles, the more significant streetscape changes relate to the presence of human drivers or not. Human drivers need visual signals to guide them and are potentially more prone to error, requiring greater separation from other users and roadside objects like trees.

Even more fundamental is the issue of private ownership. If vehicles are shared, either as collective on-demand transport or used individually on a car-share basis, this likely reduces vehicle numbers on the road and avoids the need for local parking.

The study therefore contrasts the existing 2018 situation with two longer term scenarios, to provide a vision of the potential differences:

- Slow Lane – Slow uptake of AVs and ZEVs, leading to a mix of shared, automated, electric vehicles and privately owned, petrol or diesel human-driven vehicles.
- Fleet Street – Rapid evolution to total AV uptake, with all vehicles shared, all zero emissions, and all connected, requiring less visual infrastructure to guide them.

It is also important to note that while this study has relied upon evidence as well as extensive urban design and planning experience and expertise, given the future under AVZEVs is highly uncertain, a degree of creative licence has been taken when designing these streetscapes.

CHAPEL STREET | SOUTH YARRA (TODAY) 2018

CHAPEL STREET | SOUTH YARRA

THE POSSIBLE FUTURE

What may have changed by the time our scenarios become reality

Chapel Street has grown in popularity as a retail destination serving an ever-growing population

No on-street parking in this busy area

New development provides offices and apartments at upper levels behind shops.

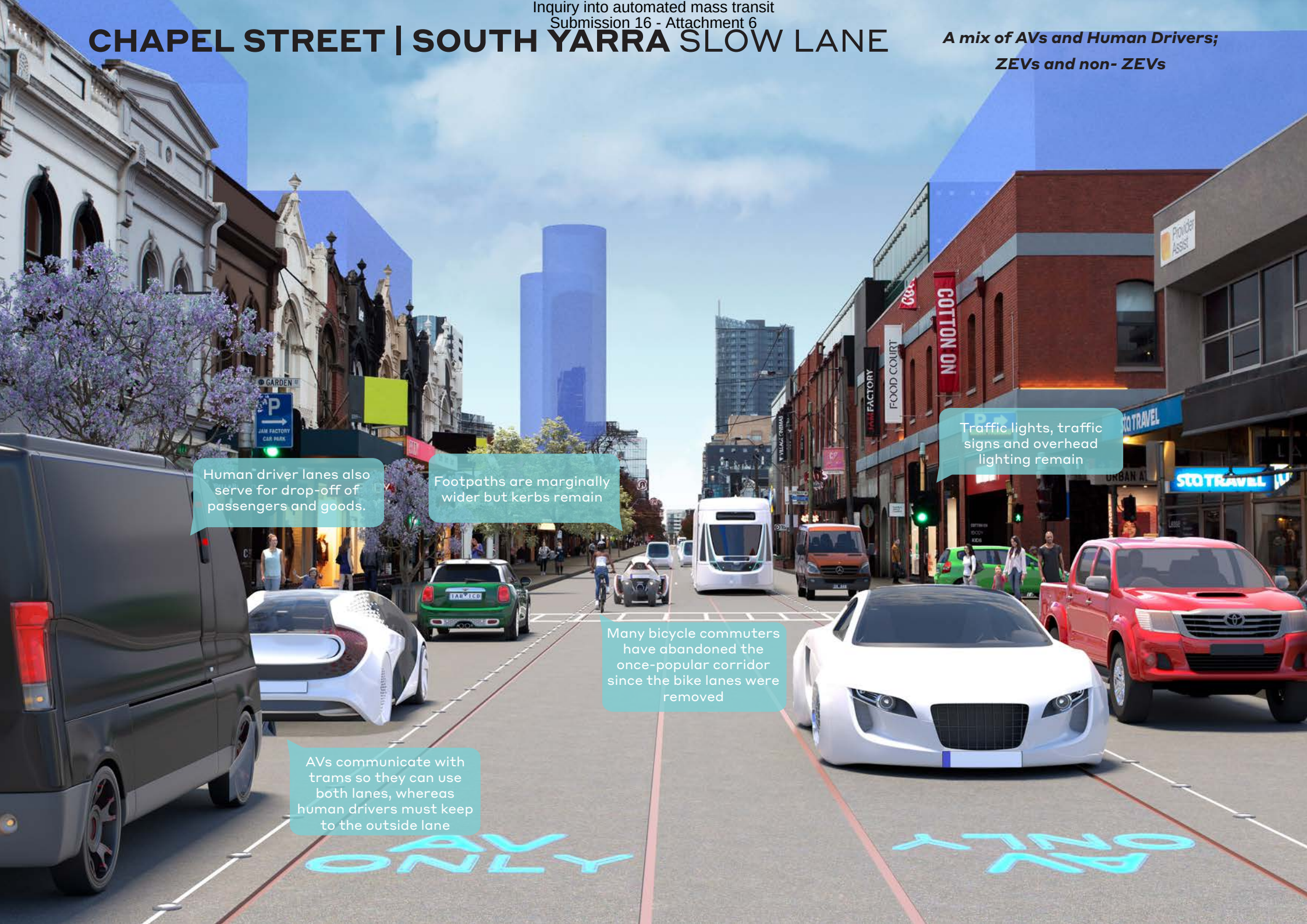
Vehicles and bicycles still enter for local access and drop-off, with fast movement routes provided on nearby corridors

Priority is given to trams and pedestrians

Note: For the purpose of clarity, automated vehicles are shown in white

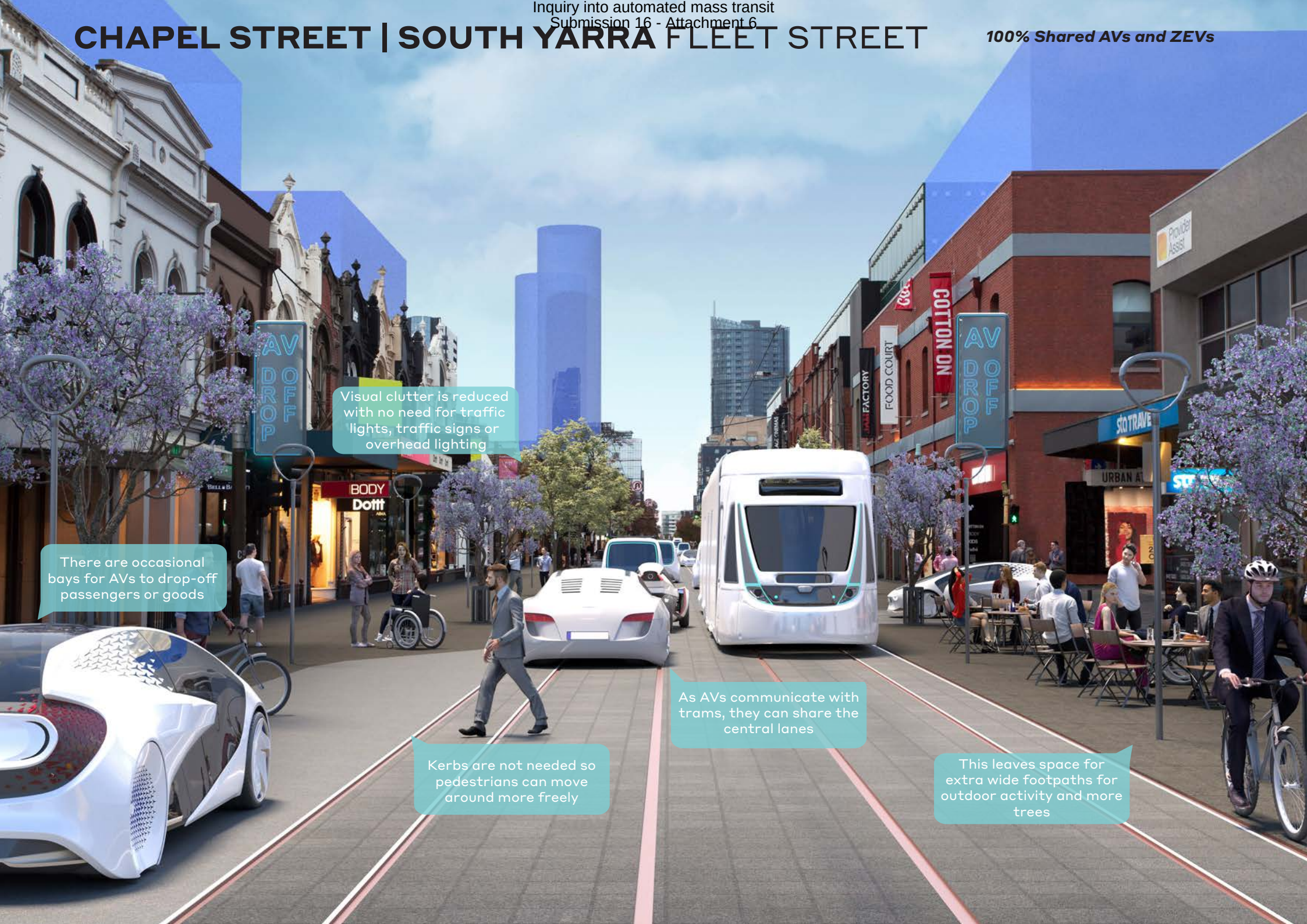
CHAPEL STREET | SOUTH YARRA SLOW LANE

A mix of AVs and Human Drivers;
ZEVs and non- ZEVs



CHAPEL STREET | SOUTH YARRA FLEET STREET

100% Shared AVs and ZEVs



WATERGARDENS | TAYLORS LAKES (TODAY) 2018

WATERGARDENS | TAYLORS LAKES

THE POSSIBLE FUTURE

What may have changed by the time our scenarios become reality

Population and land values have boomed so development now occupies open lots and at-grade parking areas

Home delivery is now the norm for most goods, but people continue to flock to shopping centres for social purposes

Logistics is big business and goods warehousing abounds with dedicated freight hubs

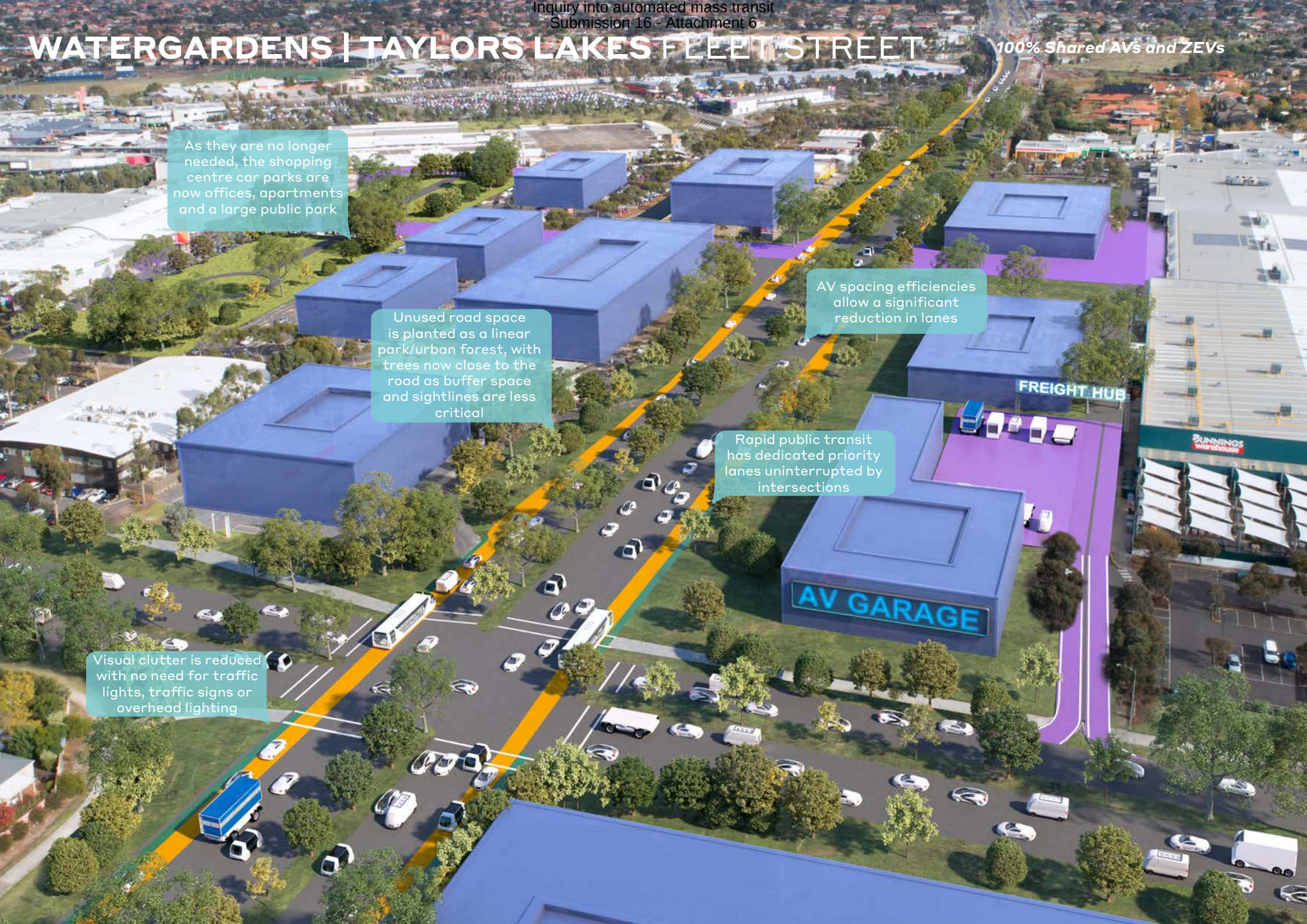
Note: For the purpose of clarity, automated vehicles are shown in white

WATERGARDENS | TAYLORS LAKES SLOW LANE

A Mix of AVs and Human Drivers; ZEVs and non-ZEVs

WATERGARDENS | TAYLORS LAKES FLEET STREET

100% Shared AVs and ZEVs



STURT STREET | BALLARAT (TODAY) 2018

STURT STREET | BALLARAT

THE POSSIBLE FUTURE

What may have changed by the time our scenarios become reality

Regional cities are flourishing as they are more accessible than ever

Some parking has been retained as many regional residents and tourists travel long distances, and need to charge their vehicles

New development provides offices and apartments

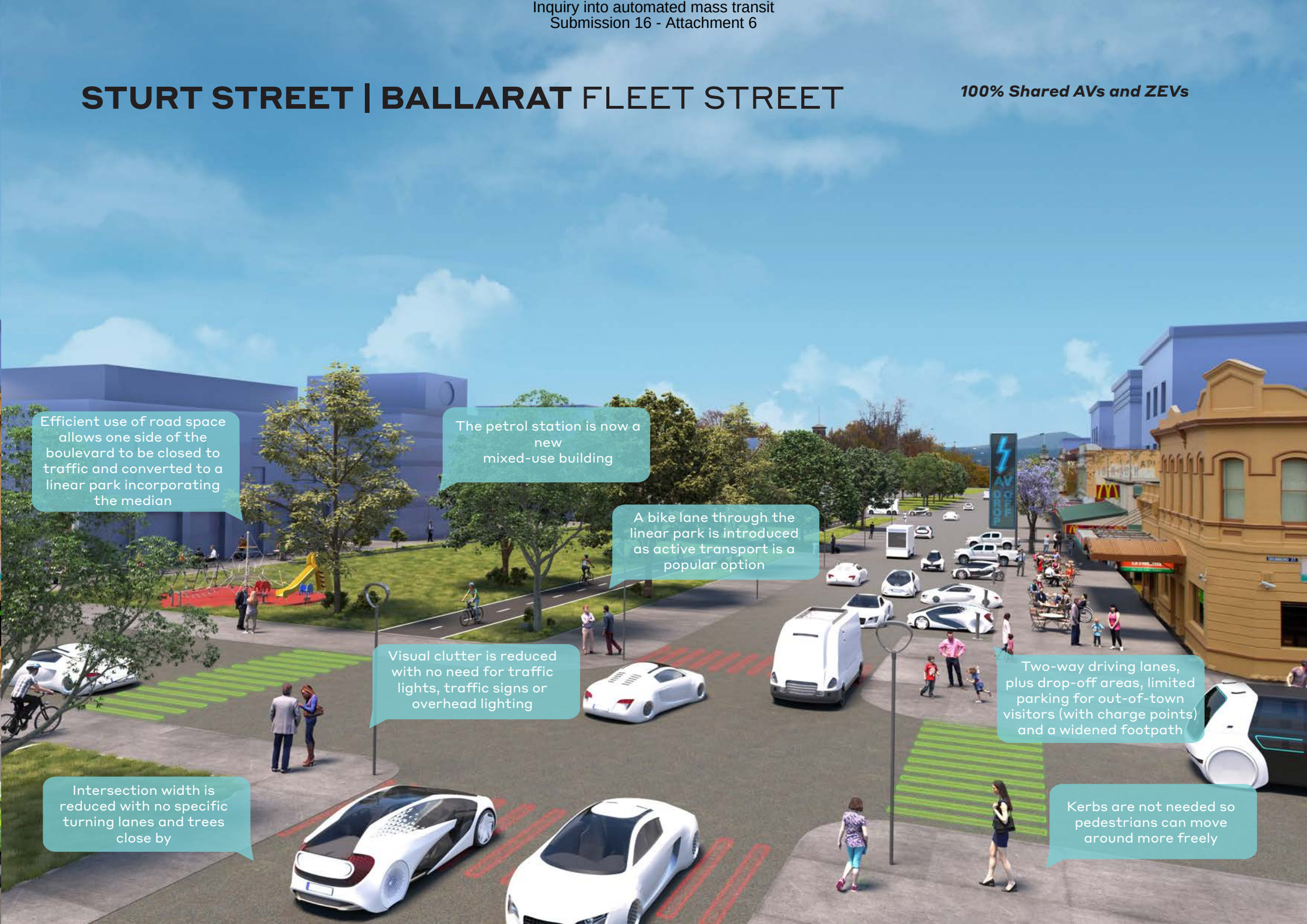
Note: For the purpose of clarity, automated vehicles are shown in white

STURT STREET | BALLARAT SLOW LANE

A Mic of AVs and Human Drivers; ZEVs and non-ZEVs

STURT STREET | BALLARAT FLEET STREET

100% Shared AVs and ZEVs



SIMPSON STREET | YARRAVILLE (TODAY) 2018

SIMPSON STREET | YARRAVILLE

THE POSSIBLE FUTURE

What may have changed by the time our scenarios become reality

New townhouse and apartment developments accommodate the booming population

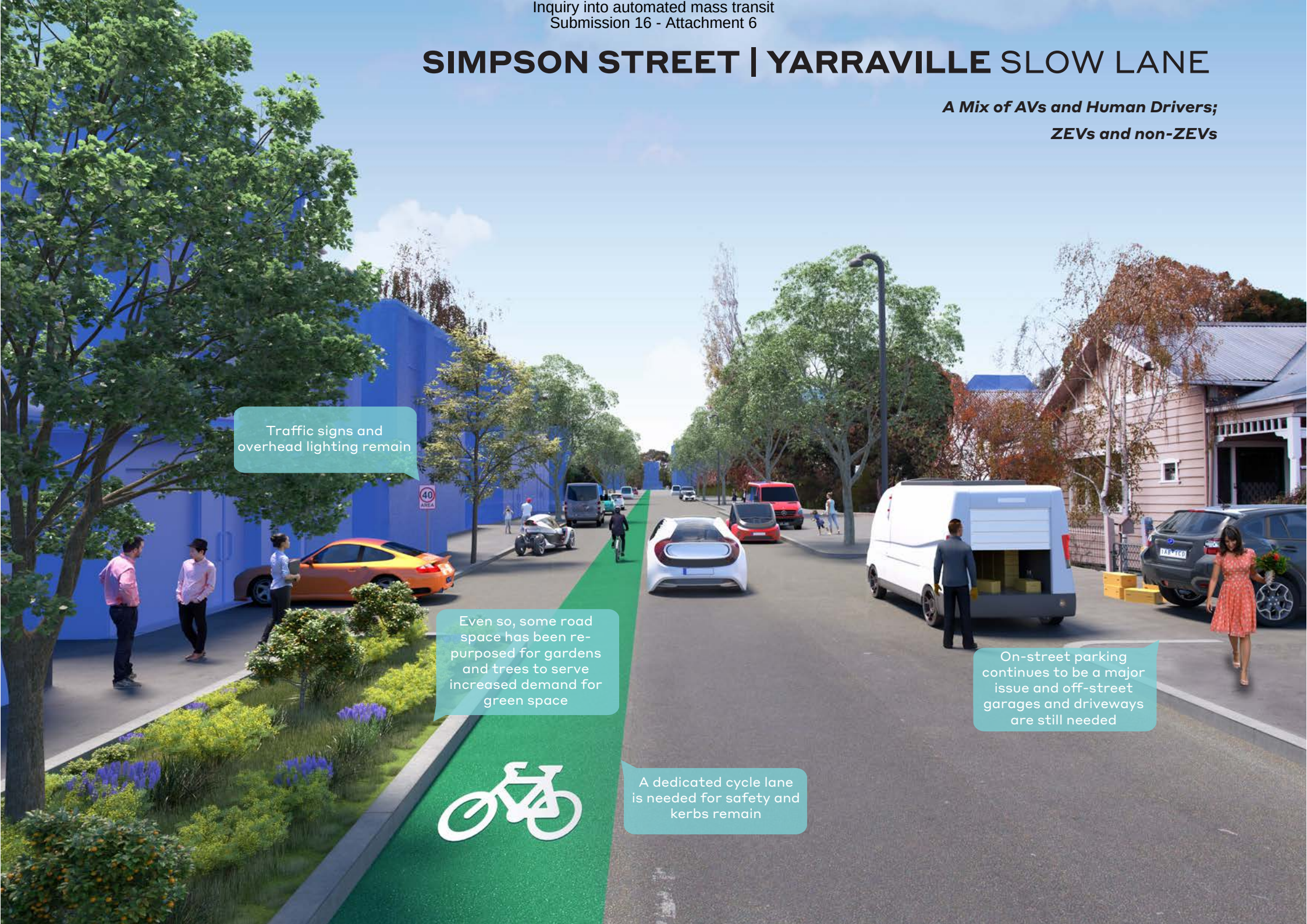
Home delivery is now the norm for all goods

Tree-planting is promoted to reduce urban heat island effects

Note: For the purpose of clarity, automated vehicles are shown in white

SIMPSON STREET | YARRAVILLE SLOW LANE

A Mix of AVs and Human Drivers;
ZEVs and non-ZEVs



SIMPSON STREET | YARRAVILLE FLEET STREET

100% Shared AVs and ZEVs

RINGWOOD STATION (TODAY) 2018

RINGWOOD STATION
THE POSSIBLE FUTURE

What may have changed by the time our scenarios become reality

The station has become a busy public transport hub with trains, large buses, shuttles and AVs

Bicycles have grown in popularity with the provision of protected lanes

The number of station and shopping centre drop-off and pick-ups has increased since the introduction of AVs, requiring separate pick-up/drop-off areas

No on-street parking in this busy area

Note: For the purpose of clarity, automated vehicles are shown in white

RINGWOOD STATION SLOW LANE

A Mix of AVs and Human Drivers;
ZEVs and non-ZEVs

RINGWOOD STATION FLEET STREET

100% Shared AVs and ZEVs

MONASH FREEWAY (TODAY) 2018

MONASH FREEWAY

THE POSSIBLE FUTURE

What may have changed by the time our scenarios become reality

Freeway traffic has increased significantly, bolstered by the increase in population and freight vehicles

Note: For the purpose of clarity, automated vehicles are shown in white

MONASH FREEWAY SLOW LANE

A Mix of AVs and Human Drivers; ZEVs and non-ZEVs

MONASH FREEWAY FLEET STREET

100% Shared AVs & ZEVs

APPENDICES

Clean images without text


Jaguar Shoes
GARDEN
P
JAM FACTORY CAR PARK
BODY
Dottt
JAM FACTORY
FOOD COURT
COTTON ON
P
RIGHT PARKING
STA TRAVEL
STA TRAVEL
Provider Assist


GARDEN
P
JAM FACTORY CAR PARK
JAM FACTORY
FOOD COURT
NO COTTON ON
P
RIGHT PARKING
STA TRAVEL
STA TRAVEL
Provider Assist
ONLY
ONLY


AV DROP OFF
BODY
Dottt
COTTON ON
FOOD COURT
AV DROP OFF
Provider Assist


BUNNINGS
KFC


FUEL
CHARGE
FREIGHT HUB
BUNNINGS
warehouse


FREIGHT HUB
AV GARAGE
BUNNINGS warehouse


EASY
DINNERS
STURT ST
TOILETS


EAST ROAD
HEAVY TRAFFIC


AV DROP OFF

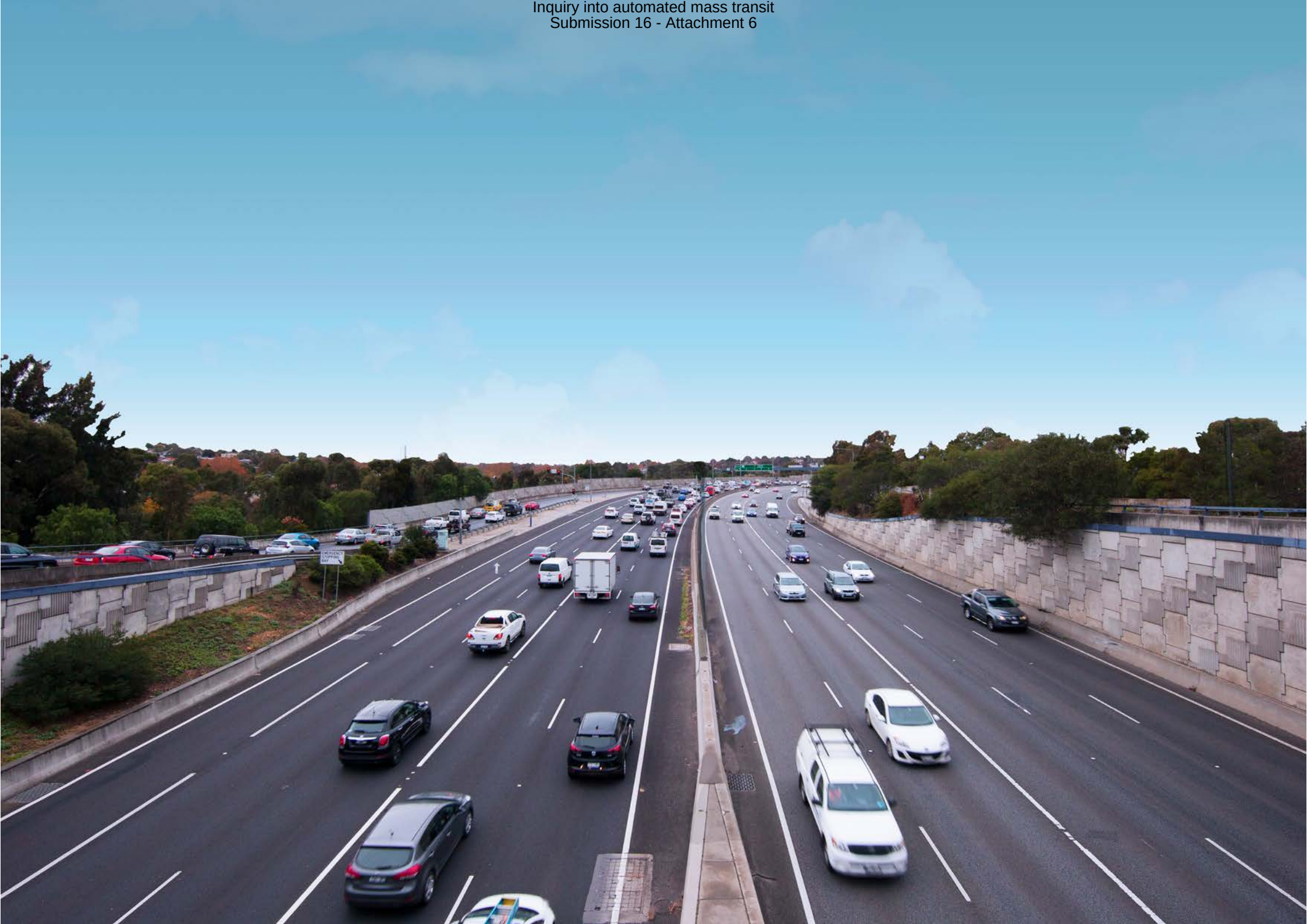

Dominic's
Fresh Fruit Supply
27 Anderson Street, Yarraville


40
AREA


surprises
Smart


METRO


METRO
AV DROP OFF



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