MEMORANDUM

TO: Matthew Veale (VPA)

FROM: Alex Blackett (GTA)

DATE: 27/10/2016

OUR REF: V106380

PAGE 1 OF 14 plus attachments

RE: **Altona North, Precinct 15 – Integrated Transport Study**
Potential North-South Link Feasibility

1. Introduction & Background

The Victorian Planning Authority (VPA) has engaged GTA Consultants to prepare an Integrated Transport Study for the proposed development of Precinct 15 in Altona North. As part of the study, GTA has undertaken initial feasibility investigations regarding a potential north-south connection between Blackshaws Road and Francis Street, as an extension of New Street, that would go under the freight line, West Gate Freeway and Fogarty Avenue, then up and along the west side of McIvor Reserve to Francis Street.

Figure 1 over the page illustrates the location of Precinct 15, with the potential connection highlighted in red. It should be noted that a connector level road is already proposed on the west side of McIvor Reserve as part of the approved (but yet to be built) residential development on the old Bradmill Denim Factory triangular site bounded by McIvor Reserve, Francis Street and the freight line.

In order to understand the feasibility of the potential north-south connection, the following tasks have been undertaken, the results of which are set out in this memorandum:

- Review of the strategic modelling impacts of the potential connection on the broader transport network.
- Concept level design of the potential connection and an outline of the associated key design elements that impact its feasibility.
- Broad level construction cost estimate[1] of the potential connection.

It should be noted that this memorandum only provides the findings of our initial investigations into the feasibility of the potential north-south connection from a transport planning perspective. It does not consider other broader factors, the need for a business case, or availability of any funding sources. These would be subsequent activities to be undertaken should the initial transport feasibility of the proposal be considered to achieve a net benefit to the community.

[1] Broad level or initial feasibility planning construction cost estimates prepared by GTA Consultants must not be relied upon for quoting, budgeting or construction purposes. More detailed estimates can only be prepared from detailed civil engineering design drawings and require the services of a qualified quantity surveyor.

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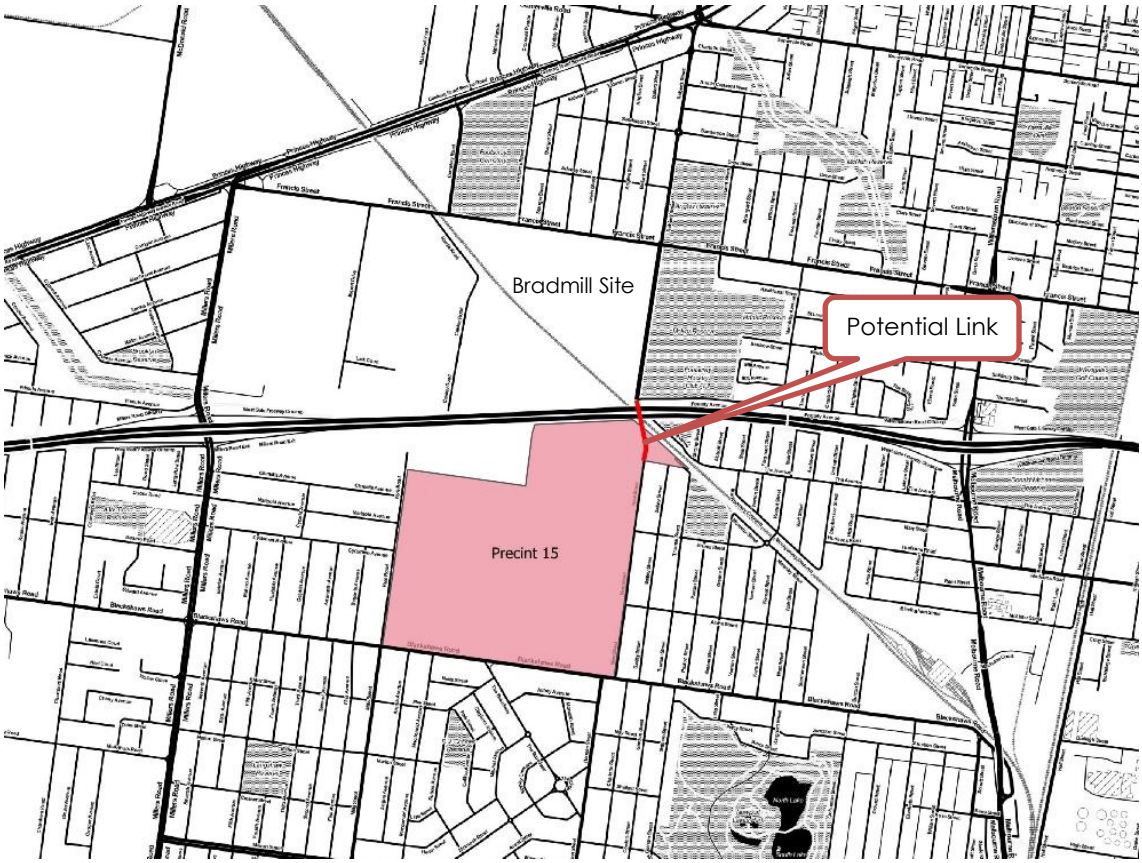
Figure 1: Location of Precinct 15 & Proposed Link



2. Strategic Modelling

2.1 Overview

Strategic modelling analysis was completed by GHD as part of their cumulative impact assessment (CIA) for the new link connecting New Street to Fogarty Avenue, henceforth referred to as the 'New Street Extension'.

The strategic modelling was completed using the Victorian Integrated Transport Model (VITM), which is a tool developed and maintained by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) to assist in the planning of road and public transport infrastructure in Victoria. VITM is a multimodal strategic model that uses future population, employment and land use data projections to forecast travel behaviour and the impacts of changes to the road and public transport networks. VITM contains all major freeways, main arterials and connector roads within the Melbourne Statistical Division.

2.2 Context and Limitations

The strategic modelling undertaken by GHD was focused on the Hobsons Bay City Council (HBCC) area to determine the long term capacity of the main corridors and the associated transport network within the municipality to support the anticipated levels of future development in the area. The analysis assessed a number of development scenarios for the following development precincts:

- The former Don Smallgoods site, Altona North (Precinct 15)
- The former Caltex Terminal, South Kingsville (Precinct 16)

- The remainder of the precinct around the former Caltex Terminal, South Kingsville (Precinct 16)
- Former Port Phillip Woollen Mills - 57 Nelson Place, Williamstown (Precinct 20)

While GTA has been provided with the strategic modelling inputs, we have not reviewed the model in detail. As such, our analysis of the impacts of the various development scenarios and the New Street Extension are generally based on the available outputs on the modelled links from the VITM scenario runs completed by GHD.

The scenarios that GHD developed and provided outputs for are as follows:

- 2031 Base Case - Do Nothing (no development)
- 2031 Scenario 1 - All developments with half development of Precincts 15 and 20 only
- 2031 Scenario 2 - All developments with half development Precinct 16 only
- 2031 Scenario 3 - All developments with half development Precincts 15, 16 and 20
- 2031 Scenario 4 - All developments with full development of Precincts 15 and 20 only
- 2031 Scenario 5 - All developments with full development of Precinct 16 only
- 2031 Scenario 6a - All developments with full development of Precincts 15, 16 and 20
- 2031 Scenario 6b - All developments with full development of Precincts 15, 16 and 20 including the New Street Extension

For the purpose of this analysis, GTA has reviewed and assessed the modelling outputs from Option 6a and Option 6b (i.e. with and without the link following full development of the development sites in 2031).

2.3 Forecast Traffic Volumes

The forecast traffic volumes on selected key links are summarised in Table 1, noting that Option 6b includes the New Street Extension.

Table 1: Forecast Traffic Volumes on Selected Links

Link	Direction	AM Peak 2-Hour		PM Peak 2-Hour		Daily	
		Option 6a	Option 6b	Option 6a	Option 6b	Option 6a	Option 6b
Millers Road	Northbound	3,390	3,290	3,150	3,000	21,740	20,510
	Southbound	3,040	2,850	3,540	3,410	21,740	20,520
Melbourne Road	Northbound	2,770	2,650	2,200	2,160	16,630	16,450
	Southbound	2,060	2,020	2,700	2,600	16,560	16,210
Blackshaws Road	Eastbound	1,300	1,460	900	1,040	5,100	5,990
	Westbound	930	1,038	1,210	1,420	5,210	6,170
New Street Extension	Northbound	-	840	-	580	-	3,670
	Southbound	-	500	-	880	-	3,720

Table 1 indicates that the provision of the New Street Extension would result in approximately 300 movements (or 5%) being removed from Millers Road and 150 movements (or 3%) being removed from Melbourne Road in the peak two hours in 2031. However, some 1,400 movements will be attracted by the New Street Extension, which will also attract an additional 900 movements (17%) to use Blackshaws Road.

As such, the additional road capacity created by the New Street Extension will likely increase the overall number of vehicles in the area, as well as increase the number of vehicle movements within the local road network. Moreover, the traffic attracted by the New Street Extension will have a directional split of 60% southbound: 40% northbound, so a significant portion of the traffic will not

only come from the south to the north, but in the other direction as well, with desired trip destinations existing to the south of Precinct 15.

2.4 Volume Difference Plots

Figure 2 and Figure 3 illustrate the modelled volume differences between Option 6a (without the New Street Extension) and Option 6b (includes the New Street Extension) in 2031. Red indicates an increase in traffic volumes and green indicates a decrease in traffic volumes.

Figure 2: 2031 AM Difference Plots, Option 6a vs 6b

Figure 3: 2031 PM Difference Plots, Option 6a vs 6b

These figures illustrate that, in addition to providing additional connectivity between the areas between Millers Road and Melbourne Road / Williamstown Road, both north and south of the West Gate Freeway, the New Street Link would reduce traffic volumes primarily on Millers Road, Melbourne Road and Douglas Parade, which could lead to a reduction in congestion and improvement in travel times along these corridors, if only marginally.

These figures also indicate that northbound traffic will travel via the New Street Extension and Thomas Street to the intersection of Roberts Street / Somerville Road / Princes Highway. However, the current arrangements at this intersection prohibit this movement and therefore this may result in an overestimation of the northbound traffic volumes on the New Street Extension.

There are also significant increases in traffic volumes expected to the south along New Street and Hansen Street, and it's not clear whether these roads would be able to accommodate these increased volumes.

2.5 Travel Time Savings

The reductions in traffic volumes along the various roads in the area in the peak commuter periods as a result of the New Street Extension could be expected to achieve improvements in travel times between Options 6a and 6b. However, the increases in traffic volumes along other roads could be expected to achieve increased travel times along these roads.

The comparative travel times between Options 6a and 6b along Millers Road, Melbourne Road, Geelong Road and Blackshaws Road for each direction, are shown in Figure 4 to Figure 11. It is noted that these results relate to the average travel times during the peak AM and PM two hours on a weekday between Mason Street to the south and Francis Street to the north.

Figure 4: Millers Road Comparative Travel Times - Northbound

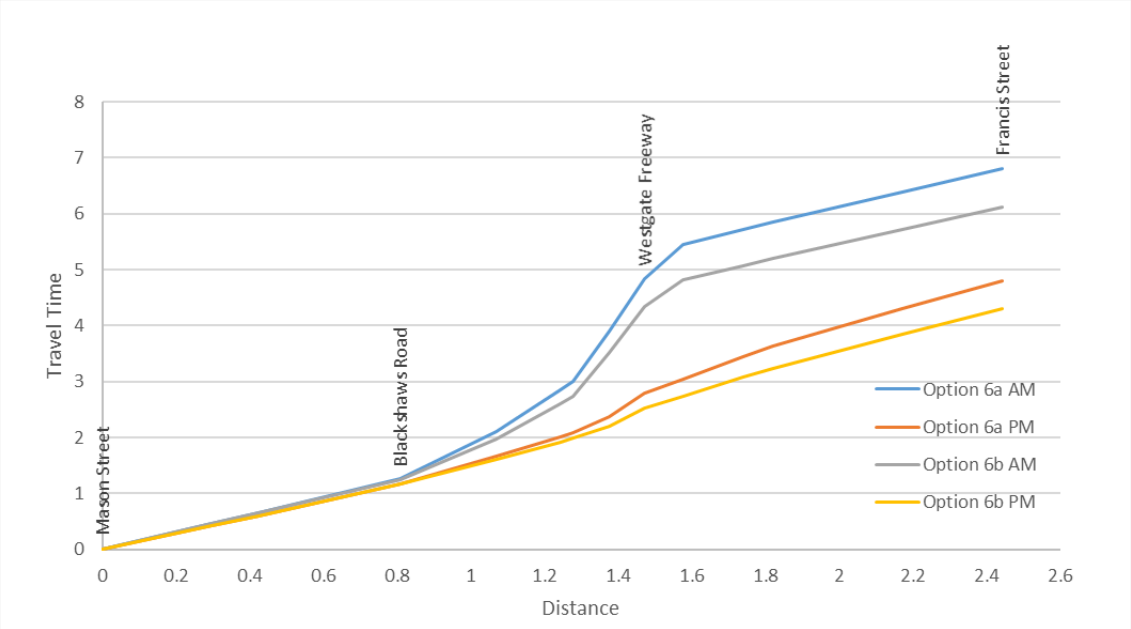


Figure 5: Millers Road Comparative Travel Times - Southbound

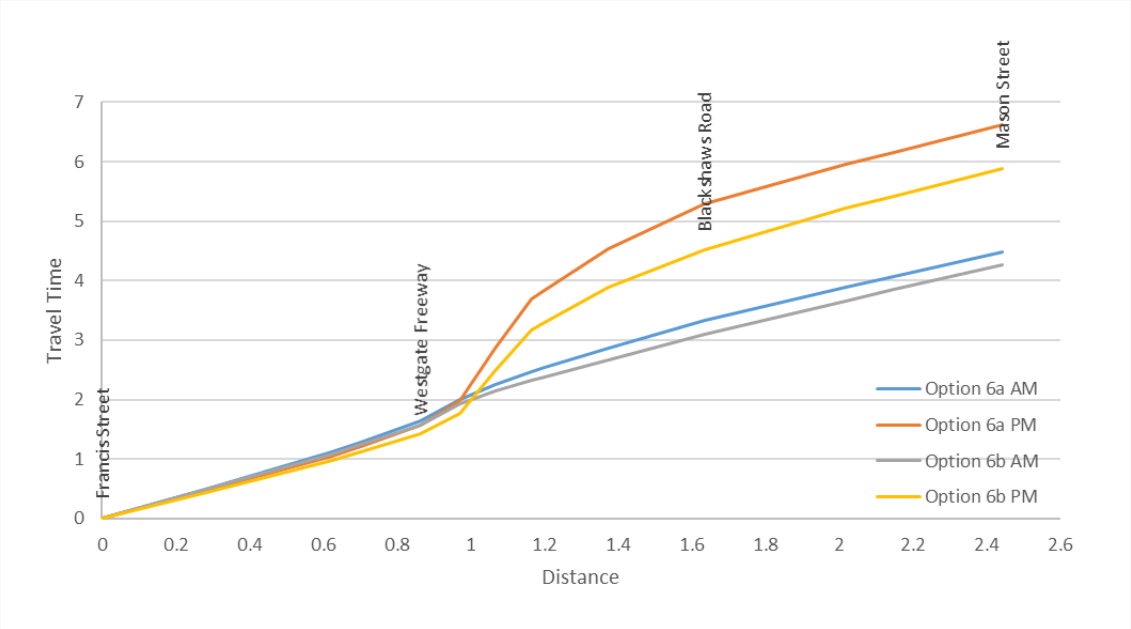


Figure 6: Melbourne Road Comparative Travel Times – Northbound

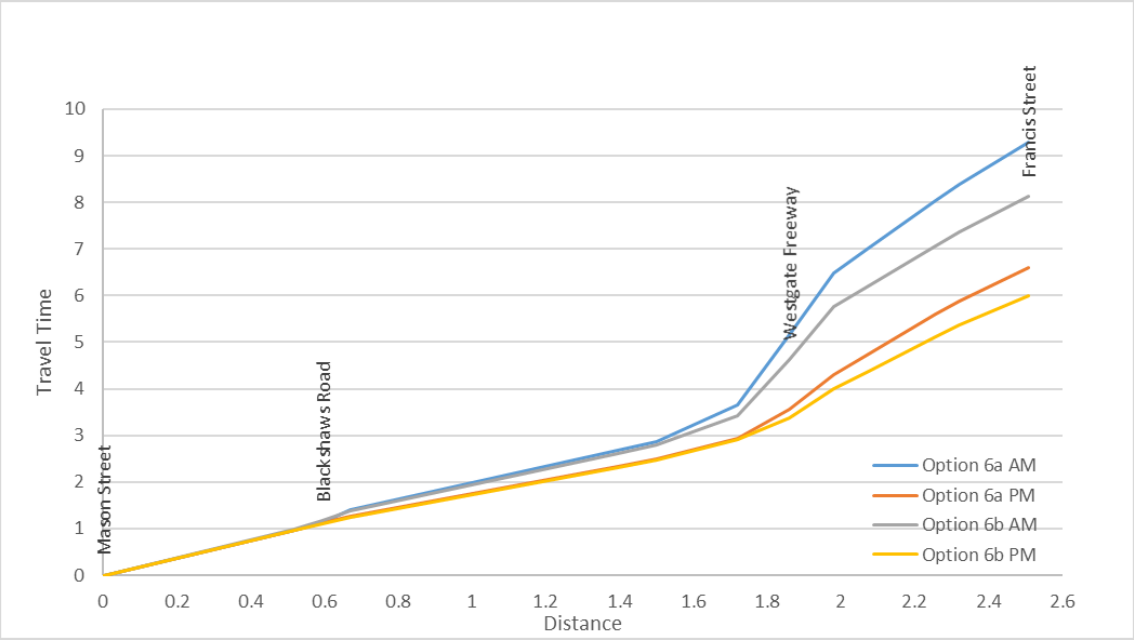


Figure 7: Melbourne Road Comparative Travel Times -Southbound

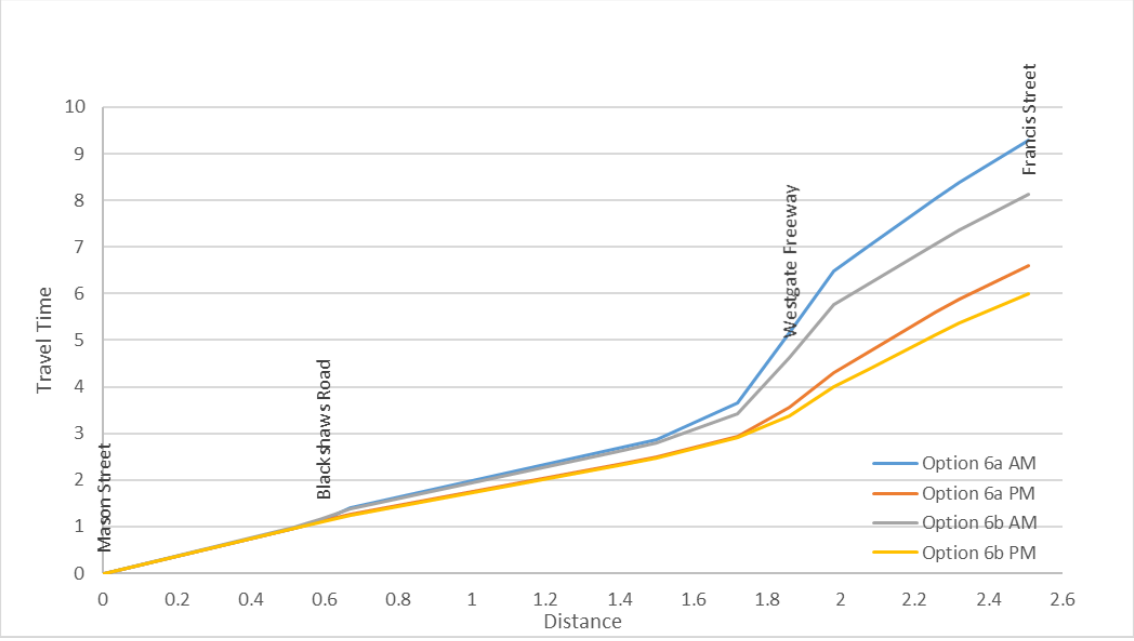


Figure 8: Geelong Road Comparative Travel Times – Northeast Bound

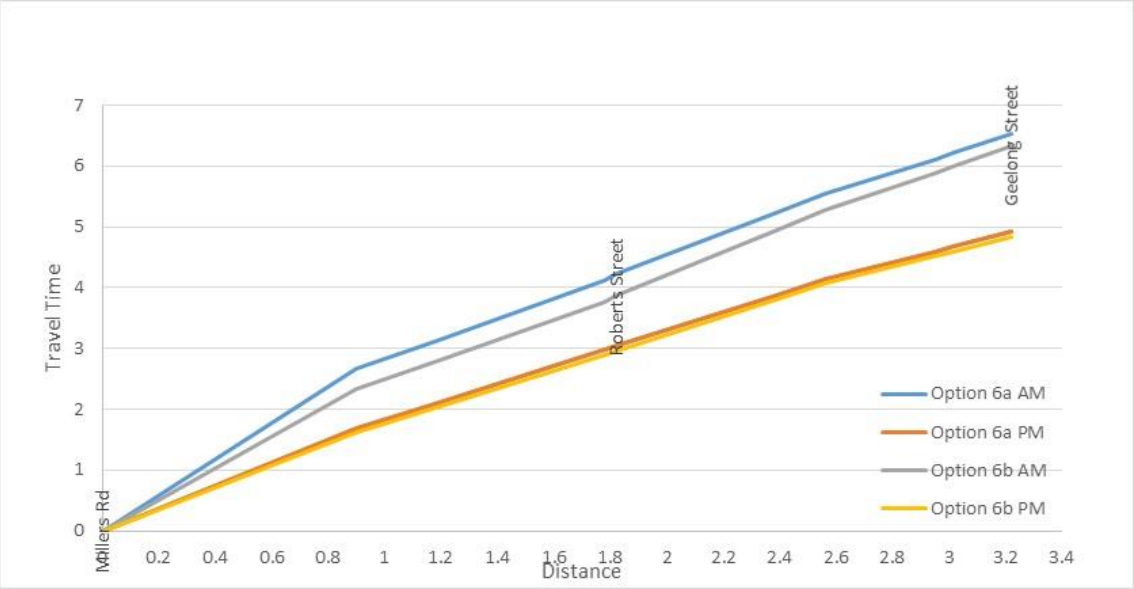


Figure 9: Geelong Road Comparative Travel Times -Southwest Bound

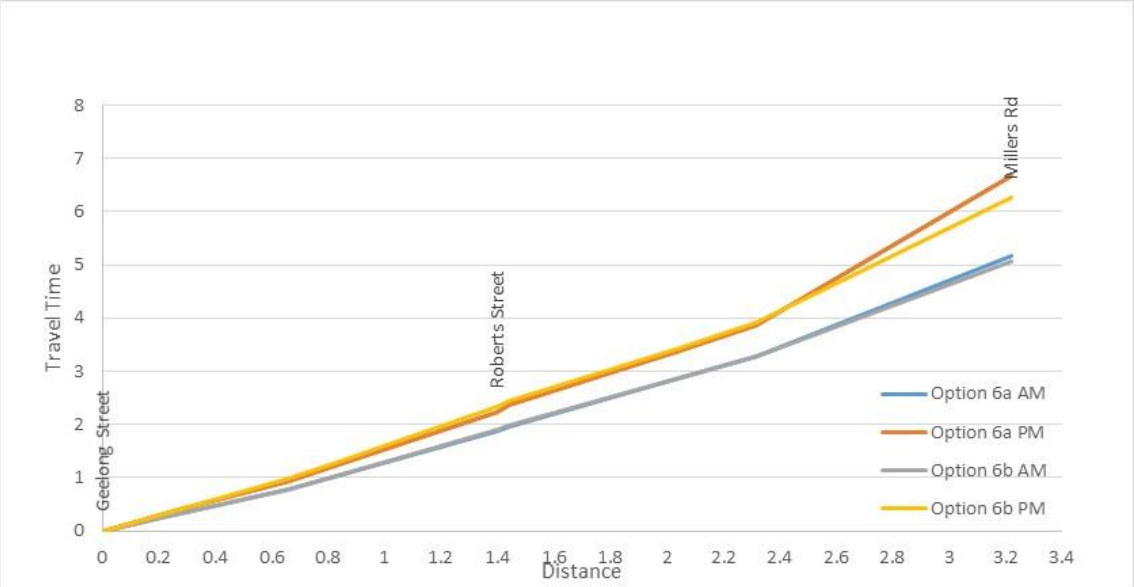


Figure 10: Blackshaws Road Comparative Travel Times – Eastbound

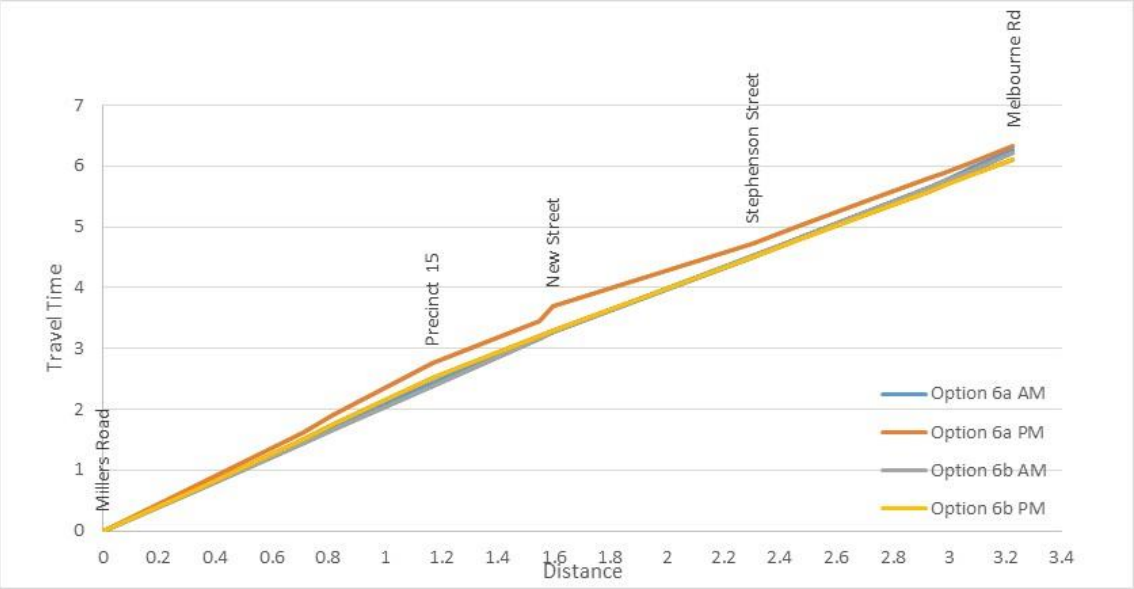
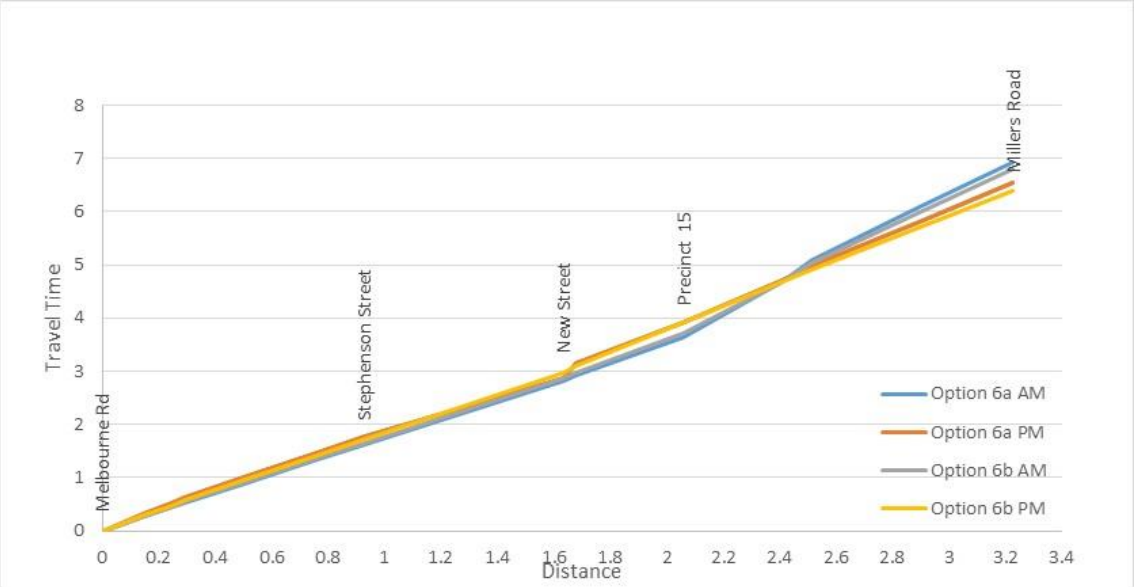


Figure 11: Blackshaws Road Comparative Travel Times – Westbound



The average comparative travel time changes per vehicle for a number of road sections in the area when compared between Options 6a and 6b in the peak AM and PM two hour periods are presented in Table 2.

Table 2: Comparative Travel Time Impacts between Options 6a and 6b

Road	Section	Direction	Change in Travel Time
Millers Road	Francis Street – Mason Street	Northbound	-35.4 sec
		Southbound	-28.8 sec
Melbourne Road	Francis Street – Mason Street	Northbound	-53.5 sec
		Southbound	-57.1 sec
Douglas Parade	Francis Street – North Road	Northbound	-18.5 sec
		Southbound	-12.7 sec
Geelong Road	Geelong Street – Millers Road	Northeast Bound	-8.8 sec
		Southwest Bound	+0.8 sec
Blackshaws Road	Melbourne Road – Millers Road	Eastbound	-6.6 sec
		Westbound	0 sec
New Street	Blackshaws Road – Brunel Street	Northbound	+21.0 sec
		Southbound	+27.8 sec
Roberts Street	Francis Street – Geelong Road	Northbound	+33.9 sec
		Southbound	+36.0 sec

Table 2 indicates that travel times will generally improve on the arterial road network, but increase within the local road network due to the trips attracted by the new road link.

2.6 Travel Time Benefits

The level of benefit these travel time savings achieve is able to be determined on a monetary basis by applying the following factors, as taken from the Economic Assessment Report for the Western Distributor, as prepared by the Department of Treasury and Finance (November 2015)[2]:

- Car (business) = $51.26/hr
- Car (non-business) = $15.65/hr
- Light commercial vehicles = $35.96/hr
- Heavy commercial vehicles = $76.59/hr
- Public transport = $16.34/hr

At this time, we don't have specific breakdowns on the make-up of the user types along each road listed in Table 2, only the heavy vehicle proportions. As such, the following assumptions have been made to undertake a high level economic assessment of the associated travel time changes generated by the New Street Extension:

- 50% of the heavy vehicles are light commercial vehicles and the other 50% are heavy commercial vehicles
- 10% of the traffic relates to Car (business)[3]
- Public transport volumes are considered to be relatively small on the roads services are accommodated, so have not been considered as part of this high-level assessment
- Rest of is Car (non-business).

Adopting these assumptions to the Option 6b daily traffic volume outputs, the daily monetary benefits gained by the New Street Extension are presented in Table 3.

[2] As taken from Table 27: Estimation of base travel time savings for improved traffic flow

[3] As indicated on page 61 of the Economic Assessment Report for the Western Distributor by the Department of Treasury and Finance (November 2015)

Table 3: Comparative Travel Time Impacts between Options 6a and 6b

Road	Section	Direction	Traffic Mix	Daily Monetary Benefits
Millers Road	Francis Street – Mason Street	Northbound	235 HV, 790 car (business), 6,875 car (non-business)	$1,586
		Southbound	235 HV, 830 car (business), 7,235 car (non-business)	$1,352
Melbourne Road	Francis Street – Mason Street	Northbound	175 HV, 450 car (business), 3,875 car (non-business)	$1,390
		Southbound	175 HV, 480 car (business), 4,145 car (non-business)	$1,575
Douglas Parade	Francis Street – North Road	Northbound	1 HV, 16 car (business), 140 car (non-business)	$16
		Southbound	4 HV, 16 car (business), 142 car (non-business)	$12
Geelong Road	Geelong Street – Millers Road	Northeast Bound	3,731 HV, 2,050 car (business), 14,719 car (non-business)	$1,333
		Southwest Bound	3,135 HV, 1,900 car (business), 13,965 car (non-business)	-$109
Blackshaws Road	Melbourne Road – Millers Road	Eastbound	851 HV, 990 car (business), 8,059 car (non-business)	$412
		Westbound	1,206 HV, 1,040 car (business), 8,154 car (non-business)	$0
New Street	Blackshaws Road – Brunel Street	Northbound	331 HV, 480 car (business), 3,989 car (non-business)	-$616
		Southbound	451 HV, 490 car (business), 3,959 car (non-business)	-$868
Roberts Street	Francis Street – Geelong Road	Northbound	211 HV, 680 car (business), 5,909 car (non-business)	-$1,311
		Southbound	327 HV, 710 car (business), 6,063 car (non-business)	-$1,497

Based on Table 3, the resulting travel time changes equate to an approx. $3,275 per day of savings from user travel times. Across the year, this would be in the order of $0.82M to $1.2M per year (based on 250 working/commuter days and 365 calendar days per year respectively).

It should be noted that the above values are only considered suitable for an initial high level economic assessment of the associated travel time changes generated by the New Street Extension. Further refinement and more detailed analysis would be required to achieve a more accurate analysis, such as part of a formal business case. At a minimum, the following areas of the analysis would need to be considered in more detail:

- Specific breakdowns on what the make-up of the user types along each road travel time savings are be evaluated on should be used
- Occupancy numbers by user type should be used, rather than vehicle numbers
- Daily travel time savings with consideration of yearly fluctuations and escalations should be used, rather than only the 2031 peak AM and PM two-hour periods

Notwithstanding, for initial broad level feasibility of the proposal and given that any other potential benefits and impacts have not been taken into account at this time, it is considered appropriate to at least consider the lower end of the $0.82M to $1.2M per year range estimated to be generated in travel time savings with the New Street Extension.

3. Concept Design

3.1 Tunnel under Freight Rail and West Gate Freeway

An initial concept level design has been prepared for the New Street Extension, and is included in Attachment 1 of this memorandum. It has generally been designed based on the following road design criteria:

- Connector level road that ties into New Street to the south and proposed connector road on the west side of McIvor Reserve.
- Two 3.5m wide traffic lanes, with 3.0m wide breakdown lanes within the tunnelled section.
- A 50km/h design speed for road curvature, which limits the ability to run an alignment between the West Gate Freeway bridge piers and footings, i.e. creates too tight turns.
- Maximum grade of 10% (will need to be ideally 12% if PTV bus services are to be accommodated).
- Headroom clearance of 5.5m within the tunnelled section.
- Approximate tunnel depth in the range of 15 to 16m subject to West Gate Freeway foundation depth.

The following key design elements impact the feasibility of the concept design in Attachment 1:

- The depth under the existing freight line and West Gate Freeway footings required to not impact their long-term structural integrity.
- Breakdown lanes or other additional safety measures to manage any incidents within the tunnel. i.e. escape route for emergencies.
- Additional width for pedestrians and/or cyclists (not recommended within the tunnel).
- Air quality and extraction facilities, as well as service cavities and access arrangements.
- Protection and landscaping around and/or over the ramped sections to prevent falls and minimising visual impact.
- Geotechnical information and required treatment within the tunnel.
- Service relocation near to tunnel portals (refer to Attachment 2 for Service information).
- The ground water table within the proposed tunnel vicinity.
- Services and required clearance zones, especially given the high pressure / transmission pipe lines along the freight line (refer to Attachment 2 for Service information).
- Boundaries and R.O.W. titles that extend below ground level.
- Construction methodologies i.e. bored, open cut.
- Train service disruption / shutdown during the construction of the tunnel
- Preferred design for the Western Distributor Project is currently only at reference design stage, so may change and impact the ability / feasibility of the New Street Extension.

It is also noted that further investigation will need to be undertaken around the broader impacts and feasibility of mitigating works to support the New Street Extension, including the following:

- The New Street / Blackshaws Road intersection (and other intersections along Blackshaws Road and Hansen Street).
- The New Street / Brunel Street / New Connector intersection.
- Interface with and along the new connector along the west side of McIvor Reserve.
- The Francis Street / Roberts Street / New Connector intersection.
- The Roberts Street / Somerville Road / Princes Highway intersection (currently left in / left out only arrangements to Princes Highway).

3.2 Alternative Route

While the above proposal would be direct and efficient in providing an additional connection between Blackshaws Road and Francis Street, it has a significant cost and will likely be limited by the ability of the connecting road network to support the anticipated traffic volumes along it, unless suitable mitigating works are able to be implemented, especially in the north-south direction along Hansen Street, New Street and Roberts Street.

As such, we have identified an alternative alignment for the New Street Extension that only tunnels under the freight line and connects with The Avenue. This is indicated on the concept level design in Attachment 1. There would also be a need for roundabouts at the following intersections to support this alternative alignment:

- New Street Extension / The Avenue
- Fogarty Avenue / New Connector Road on the west side of McIvor Reserve

This option would be less expensive but, given the roundabout connection, provide a more limited capacity when compared with the initial proposal.

Other opportunities for a connection between the south and north of the West Gate Freeway proximate to Precinct 15 are very limited. The only other potential alignment would be an extension of Kyle Road to Francis Street. However, this would require separate grade separated crossing facilities of the West Gate Freeway and the freight line. As such, it would be expected to be a more expensive option with the same benefits as the above options considered.

4. Costing

Broad level construction costings[4] have been prepared for the New Street Extension, and alternative alignment. The associated broad level construction costings include a 40% contingency to reflect the preliminary stage of the feasibility of the proposals.

On this basis, the following broad level construction costings are provided:

i Tunnel under Freight rail and West Gate freeway = in the order of $20m to $30m
ii Alternate alignment = in the order of $10m to $15m

These broad level construction costings should be considered noting the following exclusions and assumptions:

- A 40% contingency has been applied to the opinion of probable costs and this estimate is exclusive of GST.
- No consideration of ongoing maintenance costs has been included.
- Potential need for land acquisition has not been considered and therefore excluded.
- Protection of underground services during construction charges excluded.
- Opinion of probable costs have been based on desktop study with concept design only - no site inspection has been conducted.
- Existing services relocation has not been investigated thoroughly and therefore is excluded.
- Insurances and bank guarantees have been excluded.
- Consideration has not been given to the potential staging of the works.

[4] Broad level or initial feasibility planning construction cost estimates prepared by GTA Consultants must not be relied upon for quoting, budgeting or construction purposes. More detailed estimates can only be prepared from detailed civil engineering design drawings and require the services of a qualified quantity surveyor.

- Consideration has not been given to authority conditions as may be required to minimise disruption to existing road (i.e. traffic management) / train service disruptions.
- Planning, design and documentation, and project management fees have not been included.
- Price escalation is not included in the estimate.
- Excludes any allowance for abnormal weather conditions.
- Specific construction works including rock boring, rock blasting or rock excavation and removal have been excluded as geotechnical conditions are yet to be confirmed, but given the general area is made up of basalt, this is likely to be considerable.
- No allowance has been made for night-works if required.

It is importantly noted that the above broad level construction costings are for initial planning only and must not be relied upon for final construction cost estimation or budgeting purposes.

5. Summary of Findings & Conclusions

Based on the analysis and discussions presented within this memorandum, the below impacts, benefits and costs have been identified for the proposed New Street Extension.

Impacts:

i The New Street Extension is anticipated to carry in the order of 1,400 movements in the AM and PM peak two hour periods, and 3,700 vehicles per day, with a directional split of 60% southbound : 40% northbound.

ii A reduction of traffic volumes in the order of 5% on Millers Road and 3% on Melbourne Road in the AM and PM peak two hours is expected.

iii Significant additional volumes are also expected to need to be accommodated in the north-south direction along Hansen Street, New Street and Roberts Street, as well as the east-west direction along Blackshaws Road. It is unclear at this time if these can be supported and/or whether mitigating works would be required, especially at the intersection of Roberts Street / Somerville Road / Princes Highway.

It should be noted that consideration has only been given to a limited number of transport related impacts. Consideration should also be given to other impacts, including (but not limited to) the following:

- Amenity impacts on the existing residential neighbourhood due to increased traffic volumes along the local road network
- Approval / support from the other relevant authorities, such as Maribyrnong City Council

Benefits:

i It is expected that the New Street Extension will achieve a total daily travel cost saving of approx. $3,275 for motorists in the area.

ii Across the year, this would be in the order of $0.82M to $1.2M per year.

It should be noted that the above values are considered conservative on the high side for the following reasons:

- It has been assumed that the peak AM and PM two-hour period travel time savings will occur across the day, when in reality they won't be as high in the off peak periods.
- It is based on the 2031 conditions following full development of the main development sites in the area.
- Requires the New Street Extension to accommodate the modelled volumes.

Costs:

i Tunnel under Freight rail and West Gate freeway = in the order of $20m to $30m
ii Alternate alignment = in the order of $10m to $15m

Noting that the above broad level construction costings are for initial planning only and must not be relied upon for final construction cost estimation or budgeting purposes. Also, they don't include ongoing maintenance costs, which can be significant for infrastructure of this nature.

Conclusions

Given the above initial feasibility findings for the New Street Extension, it is considered that it will take in the order of 25 to 35 years to pay back the construction costs of the New Street Extension. It is noted that there are a number of further unknown costs and impactions of the proposal that needs to still be considered, such as the broader traffic impacts on the local road network.

Also, the above payback period does not include ongoing maintenance costs, which will likely be significant and potentially exceed the annual travel time savings of $0.82M to $1.2M. There may be a shorter payback period for the alternative alignment, but given its reduced capacity, it may not be material. Either way, the ability to justify the proposal through a business case, let alone secure funding against other potential projects, is likely to be difficult.

Furthermore, it is noted that the proposal would also need to gain support / approval from various other authorities, such as Maribyrnong City Council, who may not be supportive of a proposal that generates benefits by removing traffic from arterial roads to local residential streets.

Rather, consideration should be given to what benefit an investment of this nature in alternative transport modes could have on the area. Given the traffic congestion and limited alternative transport facilities that are currently in place, it could well prove much more beneficial to the community, especially when benefits like health and amenity are considered.

Attachment 1

Concept Level Design

KEY

RAMP SECTION

AT GRADE ROAD

BELOW GROUND TUNNEL

WEST GATE SUPPORT COLUMNS

HERITAGE BUIDLINGS (TO BE RETAINED)

20.0 (TAPER)

ROAD

2.0 (SHOULDER)

3.0 (SHOULDER)

3.5

3.5

3.5

3.5

2.0 (SHOULDER)

3.0 (SHOULDER)

80.0 (RAMP)

PROPOSED

FOOTSCRAY HOCKEY CLUB

FREIGHT

LINE

FOGARTY

AVENUE

HV TRANSMISSION TOWER

N

MAP REF 41/F11

FOR CONTINUATION PLEASE REFER TO SHEET 02

nearmap.com

PRELIMINARY PLAN

FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

WARNING

BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

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DESIGNED N. KERAMEAS

DESIGN CHECK -

APPROVED BY A. BLACKETT

DATE ISSUED 27 SEPTEMBER 2016

SCALE A3 0 10 20 1:1000

CAD FILE NO. V106380-01-P2.dgn

ALTONA NORTH PRECINCT 15 INTERGRATED TRANSPORT STUDY

CONCEPT DESIGN

DRAWING NO. V106380-01-01 ISSUE P2

PLOTTED BY : Nick.Kerameas ON 27/09/2016 AT 4:27:54 PM

FOR CONTINUATION PLEASE REFER TO SHEET 01

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
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Brisbane	07 3113 5000
Canberra	02 6243 9400
Adelaide	08 8334 3600
Gold Coast	07 5510 4814
Townsville	07 4722 2765
Perth	08 6169 1000

DESIGNED N. KERAMEAS
DESIGN CHECK -
APPROVED BY A. BLACKETT
DATE ISSUED 27 SEPTEMBER 2016
CAD FILE NO. V106380-01-P2.dgn

SCALE A3 0 10 20 1:1000

ALTONA NORTH PRECINCT 15 INTEGRATED TRANSPORT STUDY

CONCEPT DESIGN

DRAWING NO. V106380-01-02 ISSUE P2

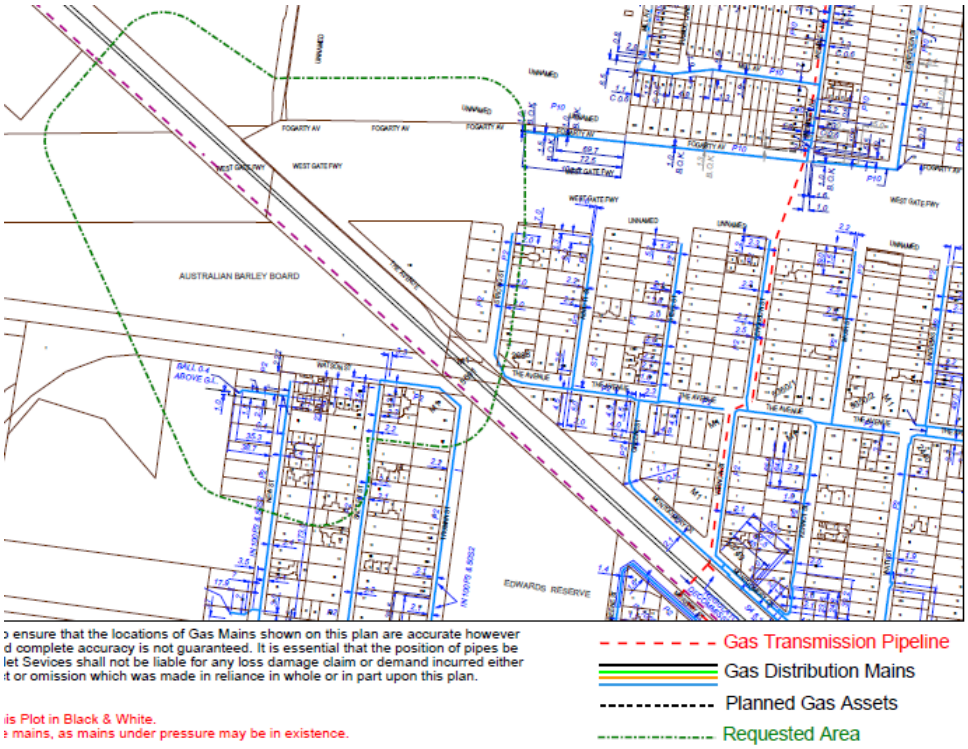
PLOTTED BY : Nick.Kerameos ON 27/09/2016 AT 4:27:56 PM

Attachment 2

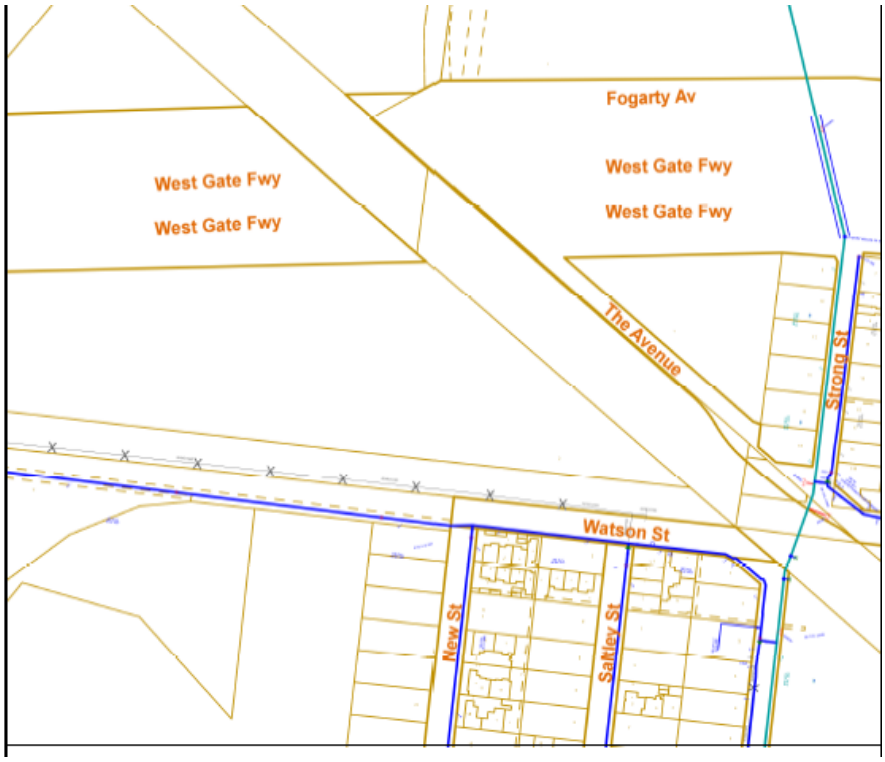
Services

APA Gas main (Transmission gas main – may have some restriction on nearby works)

Minor gas mains

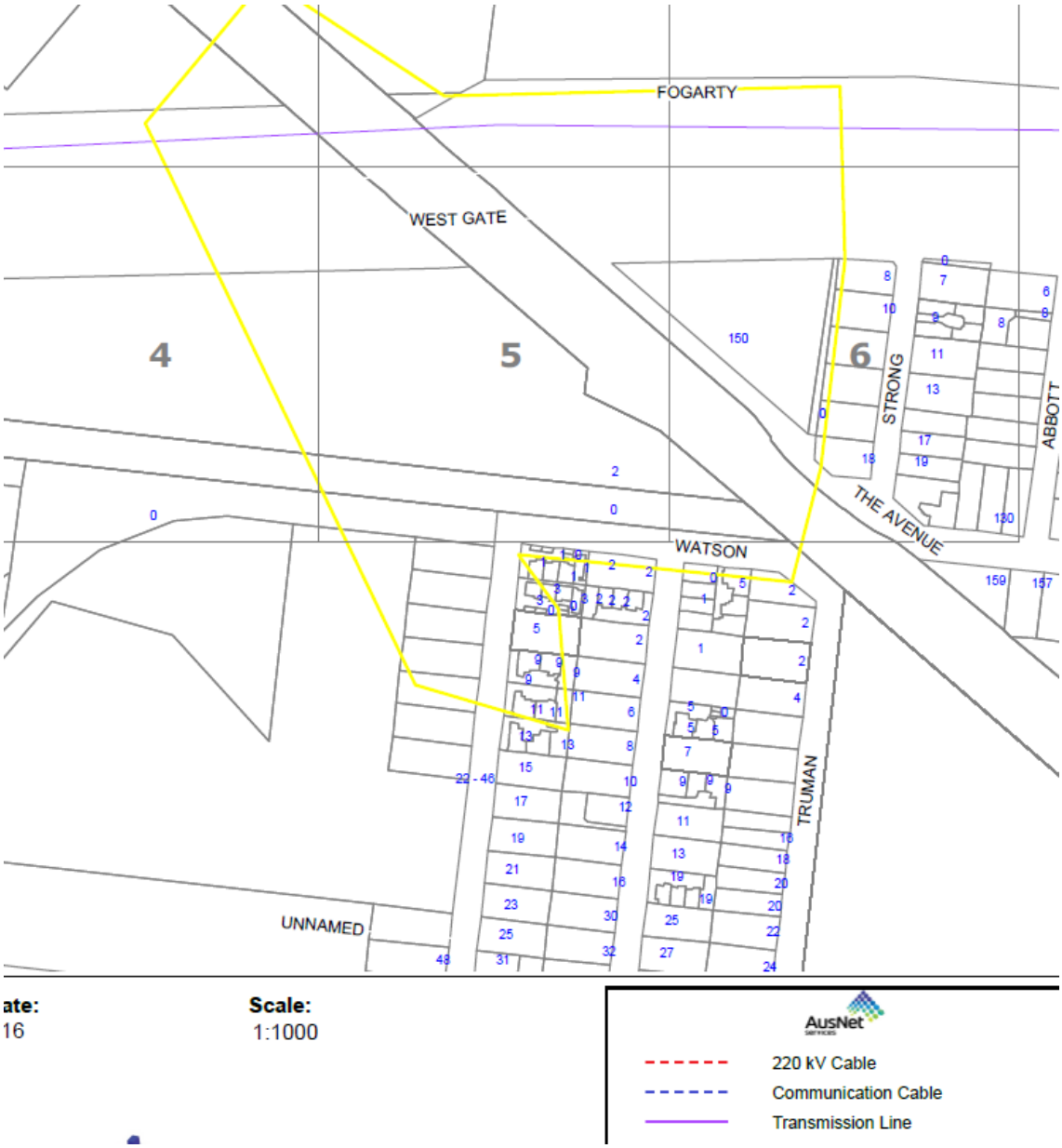


Water services

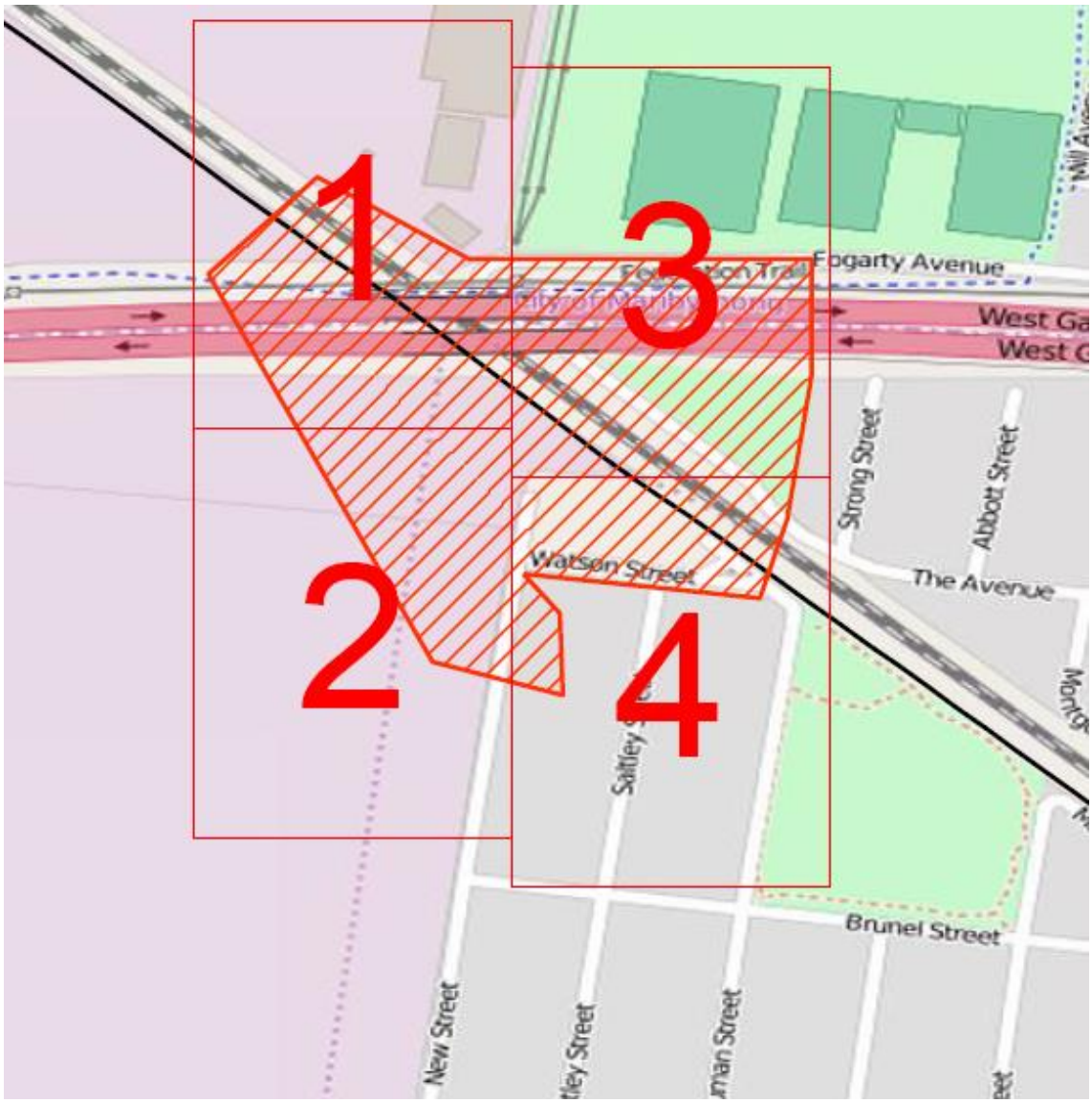


Sewer services

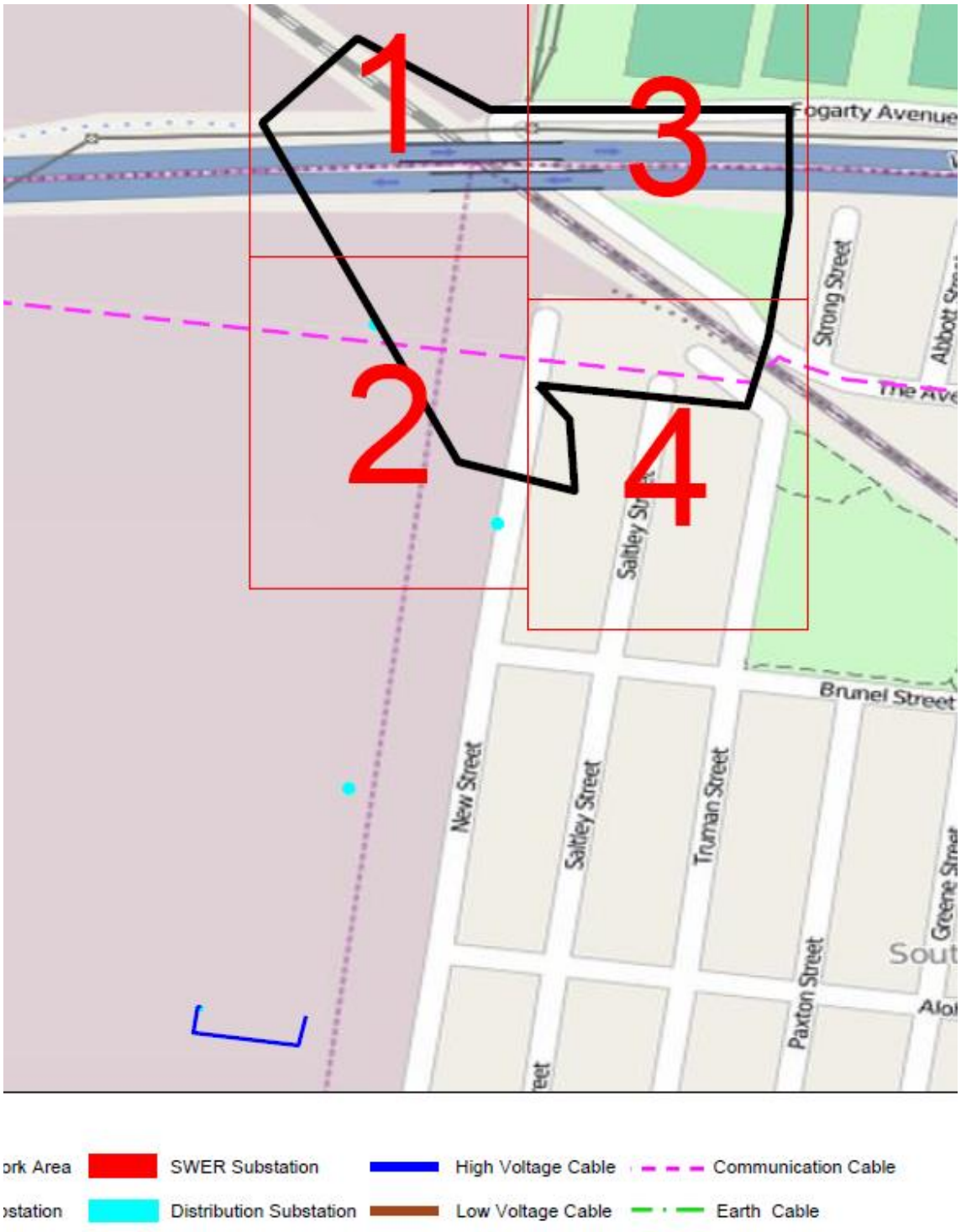
Electricity Transmission line



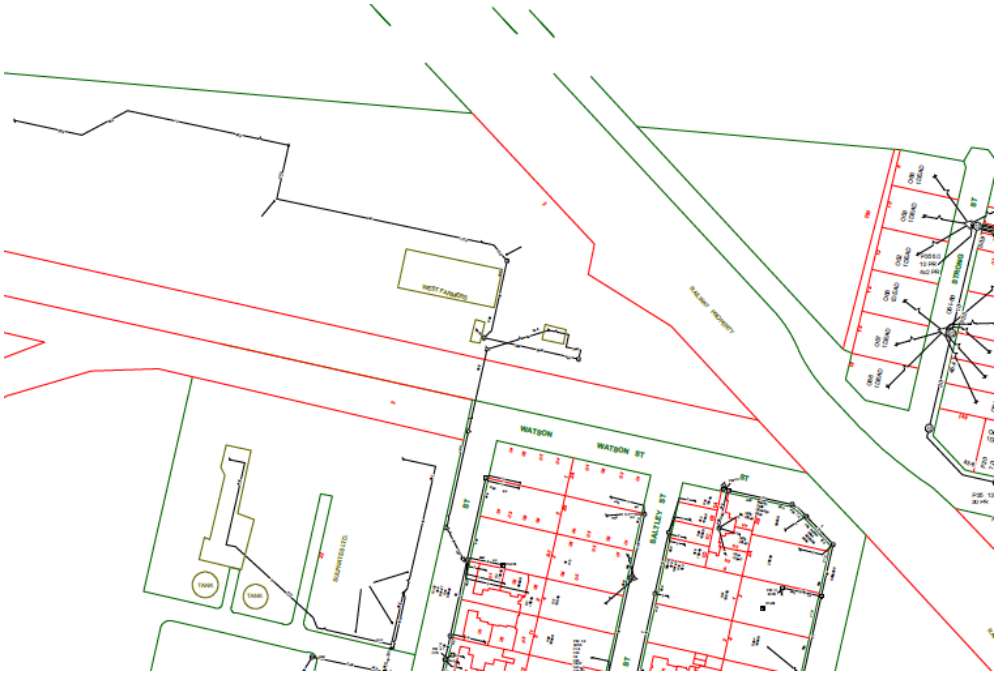
Mobil pipe line along Freight rail line



Powercor Electricity services



Telstra Services



VicTrack services and R.O.W