Peter Mangels

From: Doris Lee <Doris.Lee@ttpp.net.au>
Sent: Tuesday, 21 October 2025 4:35 PM
To: Peter Mangels; Eilish McNab
Cc: Sarah Santamaria
Subject: RE: Fitzgerald & Yorktown - Traffic - Sweep Path

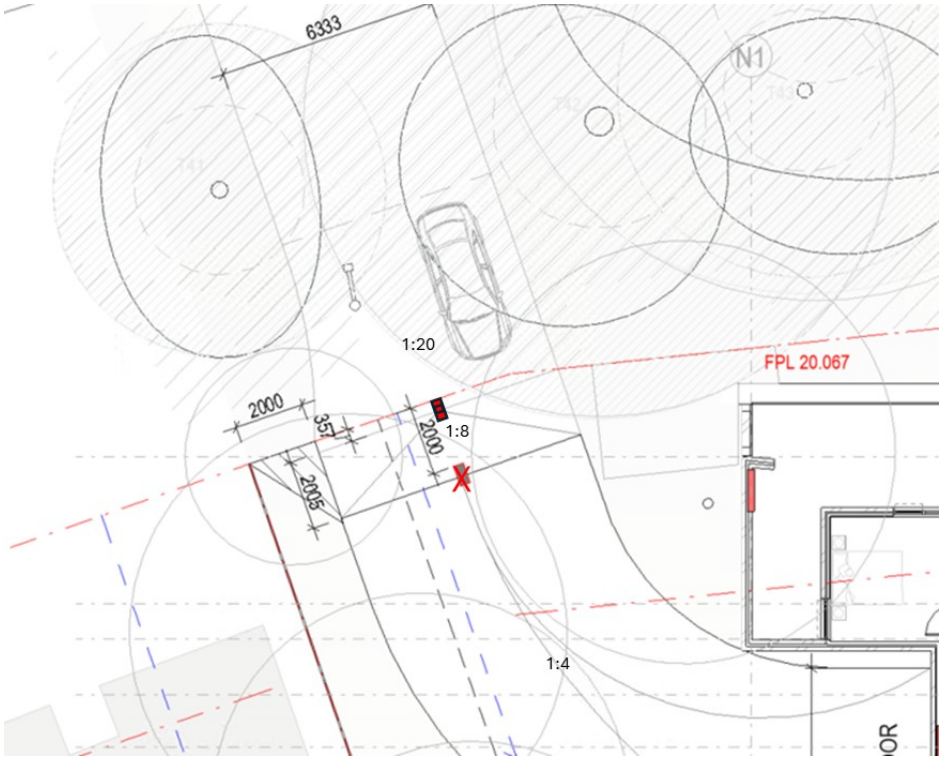
Hi Peter and Eilish

The below email has been updated to reflect the following changes:

- Visitor parking is no longer provided within the car park.
- A fob reader will be provided instead of an intercom at the suggested location.
- Residents are to stop at the fob reader to access the car park. The result of the queue length analysis should be updated based on the traffic generation associated with residents. I have reduced the assumed dwell time from 20 seconds to 10 seconds at the fob reader because residents would spend less than at the fob reader as compared with a visitor at an intercom.

The approved SSDA involves an intercom/ fob reader located outside the site boundary on a 1:20 grade. However, TTPP cannot support the retention of the fob reader outside the site boundary in accordance with AS2890.1, despite it being located on a traffic island that sits on a compliant 1:20 grade. Our email on 30 July 2025 suggested it be relocated 2m within the site boundary which is situated in the middle of the **first 4m section** of the 1:8 grade. Refer to the following screenshot for our earlier suggestion for modifying the approved design.

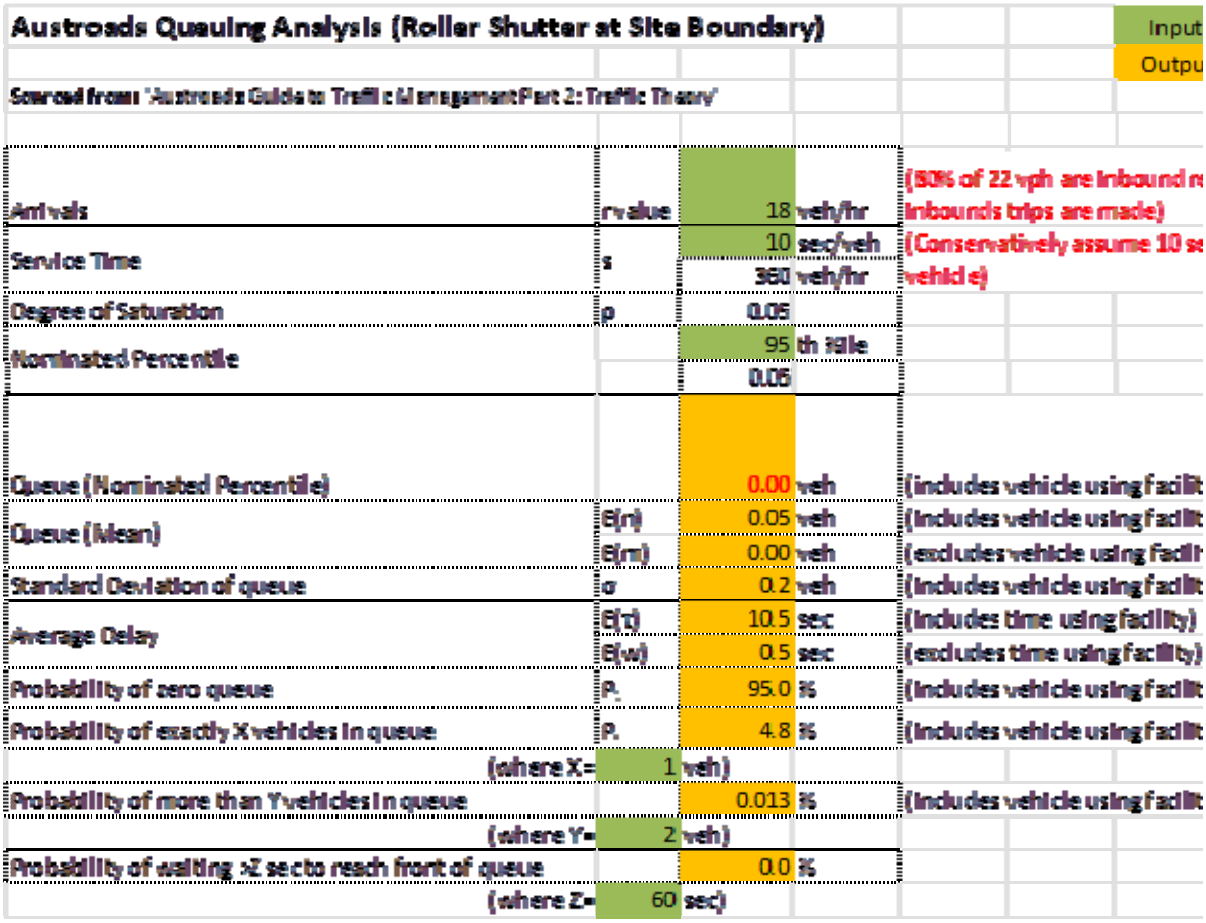
It is understood the proposed design aims to retain the ramp gradients that have been approved in the SSDA as any modifications to the ramp gradients would result in implications on the structural design. Considering the approved ramp gradients will remain unchanged with the first 2m on a 1:8 grade, followed by a 1:4 grade until the bottom of the ramp, we would update our advice to relocate the traffic median and fob reader to the 1:8 grade immediately within the site boundary as shown in the screenshot below. This is not fully compliant to AS2890.1 (2004) Section 3.3 (b) in which requires vehicular control points to have a maximum of 1:20 grade for at least 6m prior to the control point.



TTPP proposes the following justification to the fob reader being located at the immediate start of the 1:8 grade as opposed to the 1:20 grade outside the site boundary:

- Rectification of the fob reader location to be within the site boundary in accordance with AS2890.1 and to avoid any potential liability issues. The suggested location is immediately adjacent to the 1:20 grade which is a workable location based on the approved ramp gradients despite the minor non-compliance.

- A queuing analysis has been undertaken to determine the 95th percentile queue at the fob reader. The reference in Table 3.3 in AS2890.1 is in relation to the minimum queue length at a car park with control points at entrances, which is used "in the absence of more specific guidance". While AS2890.1 Table 3.3 suggests a minimum queuing length of two spaces, TTPP's queue analysis indicates that the 95th percentile queue estimates would be zero vehicles as shown in the following calculation based upon conservative assumptions involving a dwelling time of 10 seconds to tap on the fob reader to open the roller door. The inbound traffic volume has assumed to be 80% of the total traffic generation (22 vph) during the worst peak hour (i.e., PM peak hour). The 95th queue is estimated to be zero vehicles indicating there would be hardly any queues most of the time.



Austroads Queuing Analysis (Roller Shutter at Site Boundary)					Input / Output
Sourced from 'Austroads Guide to Traffic Management Part 2: Traffic Theory'					
Arrivals	r value	18	veh/hr	(80% of 22 vph are inbound re	Inbounds trips are made)
Service Time	s	10	sec/veh	(Conservatively assume 10 se	vehicle)
		360	veh/hr		
Degree of Saturation	ρ	0.05			
Nominated Percentile		95	th %ile		
		0.05			
Queue (Nominated Percentile)		0.00	veh	(includes vehicle using facilit	
Queue (Mean)	E(n)	0.05	veh	(includes vehicle using facilit	
	E(m)	0.00	veh	(excludes vehicle using facilit	
Standard Deviation of queue	σ	0.2	veh	(includes vehicle using facilit	
Average Delay	E(t)	10.5	sec	(includes time using facility)	
	E(w)	0.5	sec	(excludes time using facility)	
Probability of zero queue	P0	95.0	%	(includes vehicle using facilit	
Probability of exactly X vehicles in queue	Px	4.8	%	(includes vehicle using facilit	
(where X=	1	veh)			
Probability of more than Y vehicles in queue		0.013	%	(includes vehicle using facilit	
(where Y=	2	veh)			
Probability of waiting >Z sec to reach front of queue		0.0	%		
(where Z=	60	sec)			

The above analysis indicates that the 95th percentile queue would be minimal, thus queuing outside of the site will not significantly impact the surrounding traffic and pedestrian movements.

For pedestrian safety, it is recommended that a bollard be installed at the end of the secondary footpath which is located to the immediate west of the proposed driveway. This is to emphasise termination of the secondary footpath and to deter pedestrian movements across the vehicle queueing area outside the site boundary.

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