

Technical Note

To:	Nicholas Simpson, Planning Consultant, Elevate Planning Ltd
From:	Martin Peake, Director, Progressive Transport Solutions Ltd
LUC Number	BUN60460864
Project:	FTAA-2512-1158 Downtown Carpark Site Development
Subject:	Hotel Pick-up and Drop-off – Response to Flow Transportation and Independent Peer Review
Date:	8 June 2026

1. Introduction

This memorandum has been prepared to provide comment on the Section 55 information provided to the Panel on the Auckland Transport response for the Downtown Car Park Site Development. The memorandum specifically provides comment on the Hotel Pick Up and Drop Off (**PUDO**) and in particular:

- Section 53 Responses and Summary of Transport Matters Technical Note, Section 4.1, Flow Transportation Specialists, 21 May 2026; and
- Independent Peer Review Proposed Downtown Hotel Porte Cochere/PUDO, Customs Street West, Hughes Traffic & Transportation, 20 May 2026

2. Flow Memo

The Flow memorandum provides comments on the Auckland Transport memorandum. Flow consider that:

- AT has not considered the provision of the vehicle crossing and PUDO facility on an effects basis, particularly in relation to the existing Downtown Carpark vehicle crossings.
- The orientation of the vehicle crossings and proposed surface treatments mean vehicles travelling in and out will do so at safe speeds and not pose a risk to pedestrians walking along Customs Street West
- The PUDO will be actively managed by staff to assist with vehicles manoeuvring and move vehicles on
- Provided an analysis to demonstrate there is sufficient capacity in the PUDO based on assessment of the probability of more than two vehicles arriving at any one time

Flow has considered the Peer Review and has made changes to the proposed operation of the PUDO and recommended additional measures to manage the PUDO in the Hotel PUDO Management Plan (**HPUDOMP**).

3. Peer Review

An independent peer review of the PUDO facility has been undertaken by Hughes Traffic and Transportation. The Peer Review supports the PUDO facility based on a range of recommendations to enhance its operation.

The key conclusions from the Peer Reviewer were:

- a) The proposed PUDO will result in substantially less intensive vehicle movements than the existing Downtown Car Park vehicle crossings onto Customs Street West resulting in a favourable transport outcome in relation to pedestrian safety and amenity.
- b) The provision of the PUDO provides a functional need for the hotel and is preferably on-street pick-up and drop-off.
- c) The capacity of the PUDO should not be assessed with two formed PUDO spaces in isolation and that the use of the bypass lane for short term management should be taken into account. Assuming the use of the bypass lane, the Peer Reviewer considered that there was low probability of vehicles queuing onto the street.
- d) The vehicle crossings need careful design including surface treatment, delineation, signage and staff management to ensure pedestrian safety.
- e) It should be clarified whether the changes to the Lower Hobson Street/ Customs Street West give way arrangement is mitigation and if so, it should be included in the final design package and reflected in the HPUDOMP.
- f) It was considered that the HPUDOMP can be strengthened.
- g) The HPUDOMP should be refined to specify a specific approved overflow route should the PUDO facility be full and the operation of the PUDO should prioritise arrival prevention and metering rather than circulating vehicles through the network.
- h) Considers the inability to manage coaches is acceptable, provided the management plan addressed larger vehicles, pre-booked transfers and group arrivals.
- i) A review condition is required of the HPUDOMP should changes to the future network materially change the layout of Customs Street West and Lower Hobson Street.
- j) Monitoring should be evidence based, time bound and targeted to actual operation risks.

4. Response to Flow and Peer Reviewer

Key matters that need to be addressed as the design of the vehicle crossing, conversion of the bypass lane to a waiting area, and the PUDO capacity. These matters are addressed below. The changes to the HPUDOMP are addressed in Section 5.

4.1 Design of Vehicle Crossings

Flow and the Peer Reviewer consider that the Auckland Transport assessment of the PUDO vehicle crossings has not taken into account the existing environment of the Downtown Car Park vehicle crossings and the significant reduction in the number of vehicle movements across the Customs Street West footpath as set out in my memorandum dated 23 April 2026¹.

I agree that the proposals will result in a significant reduction in the number of vehicle movements and that the existing Downtown Car Park vehicle crossings will be substantially reduced in width, being replaced with two narrower one-way vehicle crossings. In relation to the existing environment and vehicle crossing operation, I agree that the proposals will be an improvement and will enhance pedestrian safety. This was acknowledged in my memo.

Notwithstanding, the future Downtown Car Park redevelopment will substantially change the receiving environment in the vicinity of the PUDO vehicle crossings. The development is likely to further increase the number of pedestrians using the Customs Street West footpath and circulating

¹ Traffic Review, Progressive Transport Solutions Ltd, 23 April 2026, Para 8.49 to 8.50

through the area. Therefore, it is important that the vehicle crossings and the PUDO is designed to operate safely without interfering with the safe operation of the footpath or adjacent road network with the new development in place and operating.

The Council's Traffic Reviewer did not raise any specific issues with the proposed vehicle crossings. However, I understand that the review was in relation to infringements in relation to the Auckland Unitary Plan Chapter E27 – Transportation matters where the vehicle crossings infringed standards, in particular, the number of vehicle crossings along the Customs Street West frontage and the width of the vehicle crossings. The Council reviewer did not consider the wider operational effects of the PUDO facility on the adjacent road network.

The Peer Reviewer referred to an assessment reference by Flow undertaken by the traffic consultants Commute in relation to M Social, and that Commute did not raise any notable transport concerns. The Commute assessment has not been provided to review and therefore I have not been able to verify the scope of their assessment. However, I consider that the review is likely to be focused on matters in relation to M Social rather than a review the proposed operation of the hotel PUDO.

In relation to the PUDO vehicle crossings, I raised concerns about the design of the entry vehicle crossing in my memorandum². Notably, the legibility of the entry vehicle crossing for motorists approaching from Sturdee Street, the actual design of the facility and delineation of the PUDO from the footpath. These matters have not been addressed by Flow or the independent Peer Reviewer.

Whilst I agree with the Council reviewer that the infringements on the number and width of the vehicle crossings may be acceptable in isolation, I consider there are wider design matters that need to be taken into account. In my view, as set out in my original memo, it will be difficult for motorists to appreciate the location of the vehicle crossing and it could result in sudden braking and/or lane changes in order to access the PUDO. This would result in safety issues on Sturdee Street, the bus lane and for the operation of the give way from Lower Hobson Street to Customs Street West which vehicles turning into the PUDO from Sturdee Street would need to cut in front of.

I remain of the view that the design has not been sufficiently developed to demonstrate that the vehicle crossings and layout of the PUDO would operate safely. The design should clearly show how the entry vehicle crossing will be legible to motorists approaching from Sturdee Street, and the design elements of the vehicle crossings that clearly delineate it from the adjacent footpath and protect pedestrians on the Customs Street West footpath from vehicle manoeuvring or vehicles entering and exiting the PUDO area.

4.2 Conversion of bypass lane to a waiting area

As a result of the Peer Review, Flow propose that the bypass lane will be used by vehicles to wait for a space to become available and that up to two cars could wait in the bypass lane; thereby up to four vehicles could be within the PUDO.

In my view using the bypass lane as a waiting area would not be practical in this instance. To be sure that vehicles did not queue back across the footpath (a key objective of the HPUDOMP), a vehicle arriving to find the two PUDO spaces occupied would have to wait to the eastern end of the PUDO area. This would result in the waiting vehicle preventing vehicles in either of the two PUDO spaces

² Traffic Review, Progressive Transport Solutions Ltd, 23 April 2026, Para 8.47

from exiting; the waiting vehicle would have to reverse back to the western end to provide space for the vehicles in the PUDO spaces to then exit. This would need to be undertaken under management of staff for safety of pedestrians and hotel users who may be walking in the PUDO area. This will increase the time vehicles are within the PUDO spaces. If two vehicles were waiting, this would prevent a vehicle in the western PUDO space from exiting at all; both waiting vehicles in the bypass lane would need to reverse to allow the vehicle in the eastern space to exit.

A vehicle could wait at the western end to allow the other vehicles in the PUDO spaces to exit, however, this significantly increases the risk of vehicles queuing back across the footpath or onto Customs Street West.

These issues are illustrated in Figure 1.



Figure 1 - Vehicles waiting in PUDO bypass lane

Should both PUDO spaces and both waiting space be full, a fifth vehicle arriving would have nowhere to go. The vehicle would need to reverse back out onto Customs Street West to avoid conflicts with pedestrians or vehicles on Customs Street West. Whilst an “all 4 internal positions occupied procedure” is proposed, there are no details of what this would include and how vehicles would safely be managed.

This overall operation would be impractical to enable the two PUDO spaces to operate once one or more vehicles are waiting. At best it would require intense management of the PUDO area to ensure

that vehicles do not queue back onto Customs Street West, the safety of the footpath is not compromised and that the PUDO itself operates safely.

On the basis of the above, I do not support the use of the bypass lane for vehicles to wait.

4.3 PUDO Capacity

Flow and the Peer Reviewer have undertaken an assessment of the capacity of the PUDO facility in relation to the probability of the facility being full. The assessments have utilised the same volume of vehicle arrivals (14 per hour) but they have adopted different approaches as briefly summarised below.

- a) Flow has assumed that the wait time of each vehicle using the facility is 3 minutes and using a Poisson Distribution assessment has assessed the probability of more than 2 cars arriving (0.58%) within a 3 minute period, more than 3 cars (0.08%) and more than 4 cars (0.01%).
- b) The Peer Reviewer has assumed that the wait time for each vehicle is 5 minutes and has used a simple Erlang style probability test to determine the probability of a vehicle arriving to find all four spaces within the PUDO to be full, 2.4% (i.e. assuming that the bypass lane is used for waiting).

I note that the Erlang style probability test has two different types, B and C. I understand that the Peer Reviewer has used Erlang-B in the assessment.

The three statistical assessments are relevant when assessing how often the parking spaces will be full; the Poisson distribution, the Erlang B model, and the Erlang C model. They are related but answer different questions.

The **Poisson distribution** describes the *pattern of vehicle arrivals*. It assumes vehicles arrive randomly and independently of one another, while still averaging out to a known rate over time (in this case, 14 vehicles per hour). It is important to note that the Poisson distribution does not, on its own, tell us how often the spaces will be full. Instead, it provides the realistic description of demand, how vehicles arrive; the two Erlang models then build upon this to work out the likelihood of the spaces being occupied. In short, it is the starting point for the analysis rather than a competing method.

The **Erlang B model** assumes that when a driver arrives to find all spaces occupied, they give up and leave without waiting. It calculates the proportion of vehicles that are turned away. This approach suits situations where waiting is not possible or where drivers are unlikely to wait.

The **Erlang C model** assumes that when a driver arrives to find all spaces occupied, they wait until a space becomes available. It calculates both the proportion of vehicles that must wait and the typical length of that wait. This approach suits situations where drivers are willing and able to wait for a space.

The essential difference between the two Erlang models is what happens when the PUDO is full; under Erlang B the vehicle is lost (drives away), whereas under Erlang C the vehicle waits. Both rely on the same Poisson assumption for how vehicles arrive.

The Erlang B model is the most appropriate for where no waiting is permitted in the bypass lane, whereas Erlang C model is the most appropriate model for a hotel drop-off and pick-up facility where the bypass lane is used as a waiting area. In a typical (non-managed PUDO), a driver arriving to drop

off or collect a guest has a specific reason to complete the stop and is therefore very unlikely to abandon it simply because a space is occupied. The realistic behaviour is to wait a short time until a space frees up, which is precisely the situation the Erlang C model represents. The Erlang B model, by contrast, assumes drivers leave when faced with a full facility, which does not reflect typical drop-off and pick-up behaviour, but reflects the managed PUDO with vehicles moved on if there is no space available.

It should be noted that in practice, drivers waiting for a space may not form an orderly queue and could instead wait at the kerbside or in the through-road. The Erlang C model nonetheless provides a sound basis for assessing how frequently the spaces will be fully occupied and the resulting waiting demand, which is the key consideration for planning purposes.

Based on the above assessment, I consider the Flow assessment does not provide an appropriate analysis of the operation of the PUDO facility.

The Peer Reviewer assessment is based on the Erlang-B approach which assumes that if a vehicle arrives and finds the available spaces in the PUDO to be full they drive-off. This is equivalent to the original bypass lane operation where a vehicle arriving and both PUDO spaces are full, the vehicle is directed to drive off. The Erlang-C approach more closely aligns with the use of the bypass lane as a waiting area.

I have calculated the probability of a vehicle arriving and having to wait for the PUDO spaces based on 3 minute PUDO wait time and 5 minute wait times based on the scenario as originally proposed (2 PUDO spaces and no waiting in the bypass lane) and the proposed revised operation (2 PUDO spaces and, 2 waiting spaces in the bypass lane). These are summarised in Table 1 and Table 2, respectively.

Table 1 - Comparison of Probability of spaces full (two PUDO spaces, no waiting area)

Measure	5-minute dwell	3-minute dwell
Erlang B – turned away (probability)	23.9%	12.6%
Erlang B – turned away (per hour)	~3.3 / hr	~1.8 / hr

Table 2 - Comparison of Probability of spaces full (two PUDO spaces, two waiting areas)

Event	5-minute dwell	3-minute dwell
Find both parking spaces full (wait or blocked)	~37.7%	~13.5%
– of which, able to wait in a waiting space	~31.0%	~12.0%
– of which, all waiting spaces full (nowhere to go)	~6.7%	~1.5%
Completely blocked (per hour)	~0.9 / hr	~0.2 / hr

The analysis shows that the probability of both spaces being full is significantly greater than the Flow assessment and the Peer Reviewer. The lower dwell times reduce the frequency of the number of times a vehicle would need to be turned away.

Should the bypass lane be used for waiting, the waiting area is forecast to be full around once per hour based on a 5-minute dwell time, the frequency is reduced with a 3-minute dwell time.

The above analysis assumes that only cars use the PUDO. Vans or shuttle vans with trailers in particular will occupy both PUDO spaces and thus result in a greater frequency that vehicles would need to be turned away due to lack of PUDO space.

As discussed in Section 4.2, based on the information provided, I do not consider that it is practical for the bypass area to be used as a waiting area. The analysis shows that relying on the two PUDO spaces, that around one in four vehicles would be turned away with a 5-minute dwell time, but the probability does reduce with shorter dwell times (about 1 in 8 vehicles).

I conclude that with the bypass lane used as a bypass lane, the PUDO has limited capacity and that vehicles will frequently be turned away. Lower dwell times would reduce that frequency, but there is still an appreciable probability that this will occur. There is heavy reliance on the management of the PUDO area to move on vehicles for the PUDO area to operate as intended. To improve the efficiency of the PUDO I consider that the maximum dwell time in the HPUDOMP should be reduced from 5-minutes to 3-minutes.

I acknowledge that using the bypass lane as a waiting area would in theory reduce the probability that vehicles would need to be sent away. However, there are significant practical issues of using the bypass lane for waiting which would impact on its safe and efficient operation.

5. Changes to the PUDO Operation / HPUDOMP

As a result of the Peer Review, Flow has adopted many of the recommendations of the Peer Reviewer for proposed operation of the PUDO and the HPUDOMP. The key change is that the bypass lane is now proposed to be used for short term management / queuing of vehicles when the two formal spaces are full.

The table below summarises the Peer Reviewer recommendations and whether these have been adopted by Flow.

Table 3 - Summary of Peer Reviewer Adopted Recommendations

Peer Review Recommendation	Adopted by Flow	Flow Comment	PTSL comment
Provide a specific route for vehicles to circulate around the block when the PUDO is full and provide a plan, and provide way finding signage.	Yes	Route proposed via the service lane Quay Street and Lower Hobson Street. This is included in the HPUDOMP on a plan and includes way finding signage.	The proposed route is supported as this minimises travel on the wider network across the Queen Street valley. However, it would increase the number of vehicles using the service lane vehicle crossing onto Quay Street.
Prioritise arrival prevention over overflow circulation using arrival logging for valet users and	Yes	A logging system is proposed for guests to provide arrival times and to book valet, and for vans, shuttles and vehicles with	Support the intent of the proposal. However, for shuttle vans such as the Airport Shuttle, this may be of little value as it would be

Peer Recommendation	Review	Adopted by Flow	Flow Comment	PTSL comment
larger vehicles, hotel transfers			trailers to book or provide arrival window time.	reliant on van operators to be aware of the booking requirements.
Treat the bypass lane as a managed short-term stacking / Circulation area (not as primary loading, luggage handling, taxi waiting area), effectively providing space for four vehicles in the PUDO.	Yes		Using the bypass lane will provide short term capacity if needed, and bypass lane not used as formal loading area.	For the reasons set out above, I do not support the use of the bypass lane as a short term stacking facility.
Identify whether a vehicle can be held at the PUDO entry without obstructing the footpath.	No		Not accepted as this risks vehicles queuing across the footpath and this is contrary to the HPUDOMP objectives.	I agree that a vehicle should not be permitted to wait at the entry.
Ensure that the service lane is available for PUDO recirculation and that the “private driveway/authorised entry only” signage is not confusing or would deter drivers.	Yes		The service lane would be available. Flow do not consider that the signage would be confusing.	Agree that the service lane should be available for PUDO users to circulate. Careful consideration would need to be given to its operation should the road network on Customs Street West be materially altered in the future.
Provide a larger vehicle protocol, including pre-booking for vans shuttles and vehicles with trailers.	Yes		A larger vehicle protocol is to be adopted, including larger vehicles only being called forward when there is available space in the PUDO, otherwise they would be redirected around the recirculation route.	The operation of this protocol is unclear, including what constitutes a larger vehicle and locations where vehicles would wait before being called forward. Refer to discussion below.
Monitoring to be undertaken 3 months, 6 months and 12 months after opening and 12 monthly thereafter. Monitoring to include dwell times, vehicle types, peak arrival periods, complaints, near misses and observed informal drop offs.	Yes		Measures as recommended incorporated into HPUDOMP. Assessment of crashes as they relate to the operation of the PUDO	I support the proposed monitoring and frequency, and the measures to be monitored. These largely align with the recommendations made in my original memo.

Peer Recommendation	Review	Adopted by Flow	Flow Comment	PTSL comment
Include adaptive active management triggers.		No	Considers that these can be incorporated into the regular reviews and that it would be impractical to define and measures the triggers for adaptive management.	I agree with Flow in relation to the practicality of the adopting this recommendation.
At each review of the HPUDOMP, review whether a material changes has been made to the Lower Hobson Street / Customs Street West intersection		Yes	Included in monitoring requirements.	I support this change.

In addition to the above, Flow has included an “all 4 internal positions occupied procedure”. This was not a specific recommendation of the Peer Reviewer. There are no details of what this procedure would involve and therefore there is no confidence that this would be effective.

A larger vehicle protocol is proposed in the updated HPUDOMP. However, there is no particular detail of this including:

- A definition of “larger vehicle”, whilst I assume this refers to vans and minivans with trailers, this should not include coaches or trucks as the PUDO has not been designed for such vehicles;
- The description includes references to vehicles being “called forward” when there is a space available. There is no detail as to where these larger vehicles would be waiting in order to be called forward. There are no convenient parking areas in the vicinity of the PUDO for larger vehicles (or other vehicles) to wait.

Further detail is required on the larger vehicle protocol, and should the bypass lane be used as a waiting area, further detail is required on the “all 4 internal positions occupied procedure”.

For the reasons I have set out, I do not support the bypass lane being used as a waiting area for the two PUDO parking spaces, and therefore the management measures associated with using the bypass lane as a waiting area.

The above changes have been included in the HPUDOMP. I consider that with the exception of the bypass lane being used as a waiting area, as these are mitigation measures to manage the PUDO facility, that these should be included as Resource Consent conditions.

6. Summary

This memorandum has responded to the s55 information prepared by Flow and the independent Peer Review undertaken by Hughes Traffic and Transportation in relation to the proposed hotel PUDO. My conclusions and recommendations are set out below.

I agree that the proposed one-way vehicle crossings are an improvement on the existing Downtown Car Park crossings and will reduce vehicle movements across the Customs Street West footpath. Notwithstanding, I remain of the view that the design has not been sufficiently developed to demonstrate that the vehicle crossings and PUDO layout will operate safely, particularly having regard to the future redevelopment of the Downtown Car Park site. The legibility of the entry crossing for motorists approaching from Sturdee Street, and the delineation of the PUDO from the adjacent footpath, have not been addressed by Flow or the Peer Reviewer.

I do not support the use of the bypass lane as a waiting area. While this may in theory reduce the frequency with which vehicles are turned away, waiting vehicles would block the PUDO spaces and prevent vehicles exiting, and would require intensive staff management to avoid queuing back across the footpath or onto Customs Street West. In my view it has not been demonstrated that it would operate safely or practically.

In relation to capacity, I consider the Flow assessment does not provide an appropriate analysis of the operation of the PUDO, and that the Erlang C model is the more appropriate basis where the bypass lane is used for waiting. My analysis indicates that, relying on the two PUDO spaces alone, around one in four vehicles would be turned away at a 5-minute dwell time (about one in eight at a 3-minute dwell time). I conclude that the PUDO has limited capacity, that vehicles will frequently be turned away, and that there is heavy reliance on active management for the facility to operate as intended.

Should the PUDO be retained in its current proposed location, I support the majority of the Peer Reviewer's recommendations adopted by Flow into the HPUDOMP, with the exception of the use of the bypass lane as a waiting area and the associated management measures. Whilst the changes to the HPUDOMP has alleviated some of my concerns on the PUDO, I consider that further design detail is required on the PUDO in relation to the vehicle crossings, including its entry from Sturdee Street, and on the larger vehicle protocol and the "all 4 internal positions occupied procedure" (should the bypass lane be used for waiting), neither of which is sufficiently defined to provide confidence that they would be effective.

I have the following recommendations:

- The design of the vehicle crossings and PUDO should be further developed to demonstrate that they will operate safely, including ensure the legibility of the entry crossing from Sturdee Street and the delineation of the PUDO from the Customs Street West footpath.
- The maximum wait time for vehicles in the PUDO spaces as required by the HPUDOMP should be reduced from 5-minutes to 3-minutes.
- The bypass lane should not be used as a waiting area, and the management measures that rely on it should not be adopted.
- Further detail be provided on the larger vehicle protocol (including a definition of "larger vehicle" and where such vehicles would wait).
- If the bypass lane were to be used for waiting, detail is required as to what would be included in the "all 4 internal positions occupied procedure" to demonstrate how vehicles would be managed once the waiting area is full.
- Subject to the above, the agreed mitigation measures within the HPUDOMP should be secured as conditions of resource consent.