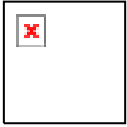


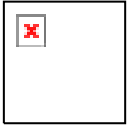
Appendix 8.06 – Traffic Engineering; Westpac Stadium Concourse

Wellington City Council
Final Report for
Indoor Community Sports Centre
Review of Concourse Proposal
April 2009



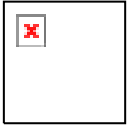
Contents

1.	Introduction	1
2.	Structure of the Report	2
3.	Description of the ICSC	3
4.	Support of Regional Transport Policies	4
5.	Future Development of Waterloo Quay	5
6.	Access to Westpac Stadium and the ICSC	7
7.	Traffic Analysis of the Hinemoa Street/Stadium/Waterloo Quay Intersection	9
8.	Parking Demand at Westpac Stadium including the ICSC	11
9.	Operational Characteristics –Delivery, Drop Off/Pick Up and Access by Coach and Minibus	12
10.	Evaluation of Pedestrian Walking Quality	14
11.	Summary	15



1. Introduction

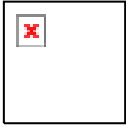
This report is intended to provide an assessment of the traffic, accessibility and parking effects of the proposal submitted by Councillor Foster, Ian Maskell, and their associates for an Indoor Community Sports Centre (ICSC) to be located adjoining the southern aspect of the Westpac Stadium. This is simply one aspect being considered by Sir John Anderson in his role as leader of an Independent Review Panel tasked with deciding upon the most appropriate location for the sports facility – this choice being between Cobham Drive and the Concourse of Westpac Stadium.



2. Structure of the Report

The report comments on the following aspects associated with traffic performance and parking demand:

- ▶ Description of the ICSC
- ▶ Support of Transportation Policies
- ▶ Future Development of Waterloo Quay
- ▶ Access to Westpac Stadium and the ICSC
- ▶ Traffic Analysis of Stadium/Hinemoa St/Waterloo Quay including assumptions around Mode Choice
- ▶ Parking Demand at the Westpac Stadium including the ICSC
- ▶ Operational Characteristics – Delivery, Drop Off/Pick Up and Access by Coach and Minibus
- ▶ Evaluation of Pedestrian Walking Quality
- ▶ Summary

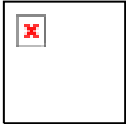


3. Description of the ICSC

It is understood that the ICSC at the Stadium Concourse is to provide an indoor sports facility for the benefit of both immediate local and citywide residents of Wellington. It is to provide 12 courts principally covering netball, basketball and volleyball although not precluding other sports from being played. Local, regional, national and international fixtures would be able to be accommodated at the proposed venue. It should have the flexibility to respond to different sports, which may dictate different court arrangements

Councillor Foster's presentation to the Review Panel suggested that the Stadium Concourse ICSC could be a multi use facility offering concerts, exhibitions, banqueting and corporate hospitality. Indeed correspondence from David Gray dated 25 September 2006 and 8th December 2006 made mention of the disadvantaged position which Wellington currently has, compared to Eden Park (Auckland) and the new Christchurch stadium due to the unavailability of a substantial corporate hospitality facility.

If indeed such other functions were to take place, it is clear that sports at the ICSC may have to be cancelled on some days. Depending upon how many times per year this would occur, the support of indoor sport could be undermined. If the primary objective of the additional space at the Stadium Concourse ICSC was to maximise revenue from functions then having indoor sport provided at the same location is of no relevance. **The danger is that the attractiveness of a multi use facility should not overshadow the key objective of the building - which is to provide a range of indoor sports to local people.** However, this aspect whilst being considered should be removed in any comparison with the Cobham Park facility which aims to offer the same sports but to a local/city wide community with no commercial objectives at the heart of their proposal.



4. Support of Regional Transport Policies

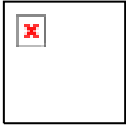
The proposed Stadium Concourse facility certainly supports the principles of the Urban Development Strategy (UDS) in that its proximity to both the Railway Station and Lambton Interchange promotes the use of sustainable transport for events being held at the stadium or future events at the ICSC. Access to the Stadium Concourse location by public transport is achieved by means of purpose designed facilities and therefore the ICSC is seen to add to the use of existing assets.

The location lies on the Johnsonville to Kilbirnie growth spine promoted within the UDS and provides reasonably convenient access to places of employment within the CBD.

Given its potential location above the existing Stadium Causeway, it clearly lends itself to promote access by walking although the Stadium is somewhat more inaccessible by bicycle due to excessive traffic levels using Waterloo Quay and the fact that the ICSC is elevated.

Generally the Stadium Concourse location also supports the key principles of the Council's Transport Strategy around the provision of more sustainable modes of transport; ensuring that the city's transport systems contribute to a healthier society and that transport choice will lead to safer and more secure travel around the city.

Council's LTCCP also reflects the same messages as above and aims to promote awareness of alternative transport choices in a concerted effort to reduce the dependency on the private car and ease congestion; making the network better connected and progressing towards more sustainable transport.



5. Future Development of Waterloo Quay

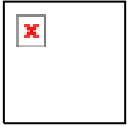
Council's LTCCP also mentions a commitment to providing improvements to Kings Wharf and Hinemoa Street as part of work to improve linkages with the Port.

Centreport who own a lot of the port land are currently attempting to gain some return on their assets through the development of a Business Park referred to as Harbour Quays. The existing tenants on the site, which include the NZ Rugby Union, Telstra Clear, and NZ Stats, will eventually be joined by other significant concerns such as the Bank of New Zealand, the IRD, Customs and Excise. Whilst Harbour Quays currently offers significant on site car parks, this is to change with a move to restricted and limited number of car parks for each new tenant. This signals a push to more sustainable transport modes given the availability of plentiful public transport services at the Railway Station and Lambton Bus Interchange. **The intention is to reverse the current trend of 70/30 split in favour of access by car to a preferred 70% access by public transport and alternative modes. This may however result in a demand from existing and new tenants seeking parking spaces at the neighbouring Westpac Stadium, which in turn may reduce available space for existing users. Figures from Centreport show that present parking spaces will be reduced by 310 spaces and the Business Park will ultimately have 534 spaces compared with the existing 844.**

The Harbour Quays Business Park will be a secure location with the principal access being via Hinemoa Street. The entrance to the Port and quayside facilities will be relocated from Hinemoa Street to Cornwall Street. The connection of the latter with Waterloo Quay will be via a new traffic signal controlled intersection, which will have to accommodate the crossing of Waterloo Quay by rail. The design for this intersection has recently been commissioned and it is envisaged that this at-grade intersection will alleviate the need for any grade separated intersection to separate port and commuter traffic.

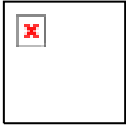
The Waterfront Route from Aotea Quay through to Kent/Cambridge Terrace and Basin Reserve currently provides an attractive means of travelling through the CBD by road. . However, in peak periods, there is considerable congestion, especially travelling north in the evening peak. The queue to the Motorway frequently stretches back to Hinemoa Street due to the sub standard on-ramp and merge at Aotea Quay. More recently, there has been additional signalised crossings and intersections provided along Customhouse Quay to provide for better connectivity between "the city and sea" and build upon the themes proposed by Jan Gehl. **A new traffic signal controlled intersection will soon be added at Kings Wharf and eventually a new connection with Waterloo Quay will follow at Cornwall Street to provide the new access to the Port.**

It can be seen that the Harbour Quays development and Port Access could lead to increased levels of traffic on Waterloo Quay. The introduction of traffic signals will regulate and control the rate of flow and journey times in the short term may increase. This may encourage people to travel via a different route, retime their journey or preferably change mode of transport. **One key advantage of any increase in travel time along the Waterfront Route will be to promote the Motorway for longer north-south CBD movements, which is in line with**



the intended hierarchy. It should also help to bring about a shift from private car to other forms of transport, which aligns with sustainability objectives.

Besides the commuter parking areas at the Stadium and Centreport, there are also two areas immediately south of the Stadium on the west side of Waterloo Quay which are available for commuter parking. Longer term these will disappear as part of the Waterfront regeneration. Thus it can be expected that parking areas in the CBD specifically earmarked for commuter parking may reduce.



6. Access to Westpac Stadium and the ICSC

The location of Westpac Stadium, being conveniently close to the Railway Station and Lambton interchange promotes good access by public transport. Wellington has the strongest support of public transport within New Zealand and has high usage by commuters during peak hours. The Regional Council has recently committed significant funds for the procurement and acquisition of new rolling stock and has also purchased new trolley buses. It appears that the Wellington public have a love affair with trolley buses and their use is being promoted within improvements along the Golden Mile and throughout the CBD.

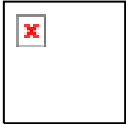
The Lambton Interchange ensures that virtually all bus users are within 10 minutes walking distance of the Stadium Concourse ICSC. There are significantly more services supporting the Stadium Concourse ICSC than the Cobham Park ICSC although the latter has bus stops only 3-4 minutes away from the complex.

With regard to the Stadium Concourse location, although better served by public transport, bus schedules show that almost half of the services using Lambton Interchange of Thorndon Quay have services, which finish by 8.00pm, which hardly encourages late use of the ICSC facility.

Councillor Foster in his presentation to the Review Panel on March 30 2009 highlighted that the Cobham Park facility would lead to additional distance travelled given its location in the eastern suburbs. His methodology in assuming access in accordance with the proportion of total population residing in a suburb fails to take account of the distance effect, availability of different modes at varying times and congestion effects. However, it is clear that the Concourse location would less minimise overall distance travelled when compared to Cobham Park when viewed from a citywide perspective.

The issue of sustainability and particularly energy savings and vehicle emissions has been specifically excluded, as it is not in the terms of reference. It is a particularly complex topic to quantify given the varying modes used for access, the different energy efficiency of vehicles and the lack of any definitive origin/destination patterns

Given the proximity of the Railway Station and Lambton Interchange and the CBD, it could be expected that the trip generation produced would reflect a higher percentage of access by walking, cycling and public transport. In the absence of any information presented by Councillor Foster and team, the proportion of patrons accessing the ICSC during peak hour has been taken to be 16% (15% by public transport and 1% walk/cycle). It should be remembered that the above percentages apply to peak hours while during the day walk in rates could be expected to be higher. If 6% of patrons are assumed to arrive by group transport and a further 20% are dropped off, this leaves 58% to arrive by private car. With regard to the latter, an average occupancy rate of 1.3 has been used to align with that assumed at Cobham Park. The peak hour trip generation rate, reflecting the above percentages and proportions of mode split, suggests a one-way rate of 200 veh/h (or two way equivalent rate of 400veh/h). This can be compared with the two rates provided for the Cobham Park resource consent hearing relating to a weekday and Saturday peak hour

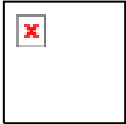


respectively which suggested two-way trip generation rates of 432 veh/h and 574veh/h. The reduced rate for the Stadium Concourse reflects the propensity and availability of public transport.

In terms of access by private vehicle, the car park at Westpac Stadium will be available for use by ICSC patrons. The Stadium has resource consent for a minimum of 850 car parks. The current operation reflects 500 spaces being available for commuter parking charging during non–event days with a further 250 being available for Board Members, Stadium business operators etc. The balance is deemed to be provided around the immediate perimeter of the Stadium. It is proposed that a total of 250 spaces be provided for the use of ICSC patrons, which means that that commuter space will effectively be reduced on non-event days to 250. The issues over pricing, loss of revenue and adequacy of parking space are discussed in Section 8.

With a CBD facility, there is the opportunity for visits to the Stadium Concourse facility to be made after work which may mean that no additional motorised movements after the daily home to work trip will be required. Patrons would simply walk to the venue from their place of work. This should be compared with the Cobham site which will undoubtedly reflect additional trips, on top of normal to work trips, being made due to the out of town location.

In terms of personal safety and security, the excessive length of the Stadium Concourse means that safety of users of the ICSC could be jeopardised due to the exposure when walking to the either the Railway Station or Lambton Interchange. This is particularly of concern on non-event days at the Westpac Stadium. This has to be compared with the Cobham Park facility, which permits young people to be dropped at the reception area. Drop off and pick up at the Stadium Concourse ICSC is discussed in more detail in Section 9.



7. Traffic Analysis of the Hinemoa Street/Stadium/Waterloo Quay Intersection

Traffic data made available by Centreport and supplemented with the aid of traffic turning data acquired through SCATS from Wellington City Council has enabled the intersection and its capability to accommodate both existing and future demand flows to be evaluated.

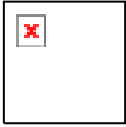
Modelling was undertaken using the AASidra software, which is commonly adopted and used throughout Australia and New Zealand to analyse and evaluate intersection control. The existing situation was referred to a base case and then the ICSC demands were loaded onto the base to produce a further design case for evaluation. The intersection has not been modelled before and reflects the decision to locate the ICSC car park within that presently provided at the Westpac Stadium and also allows for a fully developed Harbour Quays. The data modelled represents a worst-case scenario, which has combined the peak ICSC demand with the peak highway traffic. It also reflects the total traffic accessing both the port and Harbour Quays through the single current Centreport entrance, although the port traffic will eventually make use of Cornwall Street. The results of the modelling exercise are appended to this report together with traffic flow diagrams

Key to the successful operation of Waterloo Quay is the ability to facilitate through movements along Waterloo Quay. It is to be expected that side roads will incur some delays.

The exiting base case shows that the overall Level of Service (LOS) for the intersection is LOS (C), which represents an acceptable standard of performance in an urban area. All of the side road movements (from Hinemoa Street and the Stadium) show LOS (E) suggesting that these movements are at capacity. With the ICSC and additional demand, the overall Level of Service for the intersection deteriorates to LOS (D). This is seen as the design LOS for intersections within urban areas. Some of the right turns are struggling at LOS (F) - which is equivalent to severe congestion and nose to tail operations. This includes the right turn from Waterloo Quay to Centreport and the right turn from Centreport to the north along Waterloo Quay. The through traffic movements on Waterloo Quay deteriorate slightly from LOS (B) to LOS (C) southbound and from LOS (C) to LOS (D) northbound but importantly are still within acceptable levels.

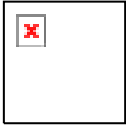
The alternative scenario assumes the ICSC plus existing commuter demand. However the existing commuter demand will not be able to be satisfied due to the loss of 250 parking spaces. This scenario is therefore somewhat unrealistic unless the 250 "reserved spaces" are returned for commuter use. However, it does represent a worst case.

It could be perceived that the location of the ICSC at the Stadium and the sharing of a common car park will mean that an additional demand is now focussed on the Stadium. Whilst originally providing 850 spaces for its own use, the Stadium now has to accommodate the demand for sports facilities at the ICSC which is deemed to translate to an additional 250 spaces. Westpac Stadium Trust's answer is to simply redistribute the original total space to reduce the original 500 commuter spaces to 250 ICSC spaces and 250 Stadium commuter parking spaces with some agreement being



reached over loss of parking revenue. According to Clare Wooding's presentation (Parking and Access Page 5), this may mean that parking would require notification

The key benefit of the reduction in commuter space allocation is to force some members of the car commuting fraternity to reassess their means of daily travel. This could translate to transferring to another car park, car sharing or changing mode of transport to walk/cycle/public transport. The Stadium car park will also be under pressure from the Harbour Quays development, which has at its heart, a sustainable transport accessibility objective. **I do not believe that the loss of weekday commuter parking would have any effect on parking in adjacent residential areas.**



8. Parking Demand at Westpac Stadium including the ICSC

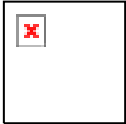
Currently Westpac Stadium Trust administers and manages the Stadium car park. The car park currently offers 500 spaces for commuter parks on a daily basis. On non-event days the price rises to \$30 from \$8, which could be perceived as being prohibitive in terms of commuter price but affordable for a special event especially if some car sharing is envisaged.

The car park capacity is 850 but some 250 car park spaces are reserved for Stadium Members, Stadium proprietors and this arrangement appears to be non-negotiable from discussions with David Gray. On event days, all spaces are made available for the specific event, which obliges normal daily users to look for a parking space elsewhere or revert to a different mode of transport. Undoubtedly, some regular users of Westpac will be displaced with the arrival of the ICSC, as the average daily demand for commuter parking exceeds the 250 commuter spaces available on event days. However, it could be argued that users of the Stadium parking facilities are used to this already due to the high price being charged on event days which clearly would result in them parking elsewhere.

Certainly one of the more difficult issues is to deal with the shortfall in payment which Westpac Stadium Trust suffer from the loss of 250 spaces and the manner in which parking enforcement will be undertaken to distinguish between the charged parking regime of the main commuter park and the free parking offered at the ICSC. David Gray of WST, has indicated that the expected annual return from weekday commuter parking on non-event days amounts to \$819000. This could be expected to decline by half – if 250 spaces are allocated for the use of ICSC with some allowance made for 20 weekdays when the spaces will be returned for WST use in connection with an event being held at the Stadium.

One of the issues to be considered by the City Council is their policy to not charge for parking related to indoor sports. Potentially if a parking charge of \$2/h could be charged on the 250 ICSC spaces over a 16 hour timeframe (06.00-22.00), assuming 20% average occupancy – this would equate to a revenue of $(250 \times 2 \times 0.2 \times 16 \times 300 \text{ days}) = \480000 , which amounts to 58% of the annual revenue budget.

The figure of 250 spaces, against that required for Cobham (319) reflects the more central location and the better access to public transport. Traffic Design Group derived the parking figures which assumed that 200-250 spaces would be needed overall. Originally there was some collaboration between Centreport and the Wellington City Council over the venue and possible car park locations, which varied between providing an ICSC on Centreport property to moving the ICSC wholly to the Stadium and even sharing the provision of car park spaces between the two operators. Under the current proposal this has now been resolved with car parking totally provided within the existing Westpac Stadium car park.



9. Operational Characteristics –Delivery, Drop Off/Pick Up and Access by Coach and Minibus

Delivery of goods to Westpac is far from ideal- currently vehicles deliver at ground floor level around the perimeter of the stadium. Ian Maskell and team have indicated that loading and deliveries to the ICSC would be affected from Concourse level adjacent to the ramp. There would be a service lift provided for moving goods from the Concourse level up to the ICSC floor level. This requires Heavy Goods Vehicles to probably offload and then travel the perimeter of the Stadium before exiting. David Gray has already mentioned that HGV's have great difficulty in travelling around the perimeter of the Stadium due to the restricted vertical clearances. It is not possible for a B-Train to turn around within the 21m width available at Concourse level. Potentially delivering goods at Concourse level could interfere with any activities occurring at the same level although it should be possible to programme goods delivery times.

Ian Maskell in his presentation of the 30 March mentioned that he envisaged drop off and pick up being made from the present Concourse level. In subsequently talking to David Gray, he indicated that in the run up to events and during events, drop off (even by taxi) if not allowed at Concourse level with taxi's being obliged to drop off passengers at ground floor level within the existing car park. The only exception allows the disabled to be dropped at car park level and shuttled to the Stadium Entrance.

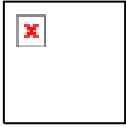
Westpac Stadium Trust (WST) stated that they would be willing to consider drop off and pick up associated with the ICSC in a designated area within the existing car park. This would presumably be within the ICSC portion. Whilst drop off can be undertaken relatively quickly, pick up requires waiting and consequently could be of concern through its effect on reducing car park space.

WST also indicated that they were generally not in favour of drop off/pick up occurring at Concourse level – even on non-event days – due to difficulties for vehicles turning around, the incidence of space being taken by vehicles parking for a considerable time when waiting to pick up passengers and problems over enforcement.

David Gray of WST also mentioned that buses presently need to make a 5-point turn to position and turn around at Concourse level. Smaller mini buses may be able to negotiate the restricted Concourse space more easily, but again this may raise the same issues as cited above and it may be more desirable to get them to drop off/pick up from the car park level.

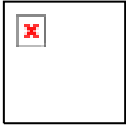
If drop off/pick up has to operate from car park level, this could well pose a problem for lift access with the current proposal only indicating lift facilities from the Concourse to the ICSC floor level.

The problems around the use of the ramp for drop off/pick up become more evident when the estimated 20% of vehicles (assumed to be either drop off/pick up) accessing the Stadium ICSC during peak hour is translated into actual numbers either dropping someone off or waiting for someone who has used the sports facilities.



If 20% of the total 400 vehicles visiting the ICSC in the peak hour are drop off/pick up, this equates to 80 veh/h. If there are uniform arrivals and departures during the hour, then in a typical 15 min period, 20 would be involved in drop off /pick up activities. On the conservative side, if 25% are parked waiting to pick up someone – this would mean 5 vehicles parked at any one time. **The scenario could occur when 5 vehicles are parked, a further 15 use the ramp to drop off, a heavy goods vehicle could be making deliveries via the service lift and possibly 4 mini buses are dropping off/picking up schoolchildren either prior to or after an event. Given that the area at the top of the ramp is 70m long and at its widest point 20m wide and allowing for space constraints in order to maintain access to both the ramps, the area available for possible parking, drop off and deliveries could effectively be reduced by 50%. For the number of vehicles anticipated to be at concourse level on top of the ramp, such flows together with the need to manoeuvre and turn makes the area unusable for this purpose.**

It should be added that all drop off/pick up movements and goods deliveries will oblige vehicles to make use of the traffic signal controlled intersection at Hinemoa Street/Waterloo Quay/Stadium Car Park which add to the existing delays incurred by stadium patrons. However, this has been taken accounted for in the traffic modelling of the intersection.



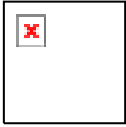
10. Evaluation of Pedestrian Walking Quality

During 2006/2007 Wellington City Council arranged for some pedestrian departure counts to be undertaken at various points on the pedestrian plaza coinciding with several major events which included an Elton John concert (Dec 2006), the 2007 IRB Rugby Sevens and the Hurricanes first Super 14 home game in 2007. The principal purpose of the counts was to assess the quality of access for pedestrians on exiting the Stadium at the completion of a major event and identify which elements of the plaza were struggling to cater for the resulting demands. This was reflected in an assessment of level of service, which uses a measure of square metres/pedestrian as its quality barometer and so is able to respond to varying width of the walkway elements.

The worst performing parts of the plaza were the Thorndon Quay steps which on all three occasions mentioned above, showed a peak minute level of service (F) which can be compared with pedestrians being obliged to shuffle rather than walk with frequent, unavoidable contact between pedestrians.

At the Elton John concert, the main plaza between the access to the railway platforms and the top of the Thorndon steps indicated LOS(F). Over this section the total count amounted to 17645 pedestrians with 987 being counted in the peak minute. The total pedestrian count for all elements of the plaza was 26689 with the attendance at the concert being 32146.

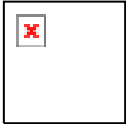
The above would suggest that level of service problems are already in evidence for crowd levels of 32000. **Consequently, it would seem that pedestrian safety could be jeopardised if a major event was planned to coincide with either a banquet or small concert at the ICSC and this should be avoided.** During presentations made to the Review Panel, 34000 has been quoted as the upper limit for Stadium attendance above which the ICSC would be obliged to close. David Gray of WST has mentioned that this could occur on 5/6 occasions per year.



11. Summary

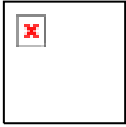
The main points to be ascertained from the Stadium Concourse proposal relating to traffic and parking issues include:

- ▶ **The proposed development provides an accessible indoor sport facility to support local community and citywide needs. It has been highlighted that there will be occasions when the ICSC will be obliged to close due to major events planned for the stadium. This largely stems from fire regulations but also is advisable due to pedestrian safety and pedestrian level of service deficiencies. However, with a move away from traditional Saturday night events to more Friday night, Sunday and even Thursday evening events, it does prove somewhat difficult for ICSC patrons to guarantee the regular use of the centre on a given evening.**
- ▶ **The proposed ICSC supports the principles of the Urban Development Strategy in its proximity to key transport nodes and further promotion of the use of sustainable transport modes for events being held at the ICSC or indeed Stadium**
- ▶ **The vehicular access to the ICSC will be by way of a traffic signal controlled intersection at Hinemoa Street/Waterloo Quay/Stadium Car Park. This will be one of a whole series of traffic signal controlled intersections along Waterloo Quay with additional ones planned for Kings Wharf and Cornwall Street. The traffic signals will provide a mechanism to control and regulate the flow of traffic along the Waterfront and help reinforce the promotion of the Motorway at the expense of the Waterfront Route for through traffic movements. The key congestion point for northbound traffic using Waterloo Quay is the sub standard on ramp at Aotea Quay.**
- ▶ **The Stadium Concourse ICSC enhances opportunities to travel by train or bus. It is better served by public transport although the distance and walking times from the Railway Station (6 mins) and Lambton Interchange (10 mins) may be a deterrent especially in wet weather. This should be compared with 3-4 mins at Cobham Park. It is also noted that many of the bus services operating from Lambton Interchange finish by 8.00pm, which does not encourage late use of the ICSC.**
- ▶ **Surveys of existing users at the Hataitai Netball Courts show a high level of access by those residing north or west of Mt. Victoria Tunnel amounting to approximately 80%. In terms of overall car travel distance, a CBD location would help reduce the amount of travel.**
- ▶ **250 car park spaces are deemed to be required for parking associated with the ICSC. Westpac Stadium Trust has indicated that this can be accommodated by reducing available commuter parking at the Stadium from 500 to 250 on non-event days but would require all 500 on event days. Given that the existing 500 spaces are fully utilised on a daily basis, this**



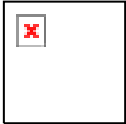
would suggest that some regular users will be displaced and be obliged to either park elsewhere or consider the use of an alternative mode of transport. The Harbour Quays development directly opposite the Stadium is planning to reduce its area available for car parking as it has an overall objective of minimising commuting by private car and promoting access by sustainable transport forms. This could mean some additional pressure to park at the Stadium from displaced Harbour Quays commuters, if they choose to continue to commute by car.

- ▶ The traffic analysis of the Hinemoa Street/Waterloo Quay/Stadium Car Park intersection shows that it is capable of accommodating all future movements associated with the Stadium, ICSC, and Harbour Quays with the level of service for through movements on Waterloo Quay not deteriorating below LOS(D), which is acceptable in urban areas. There are some difficulties for some of the more minor movements namely the right turn from Waterloo Quay into Centreport and the right turn north from Centreport into Waterloo Quay. The analysis has taken account of drop off and pick up demands predicted for the ICSC.
- ▶ The analysis mentioned above assumes a worst case scenario in that it combines the peak ICSC demands with peak hour Waterfront traffic. The peak Centreport traffic demand, which includes a fully developed Harbour Quays and port traffic being combined and using the Hinemoa Street access, is also included in the assessment. The result is that despite the high demands from the three different sources (commuters, ICSC and Centreport), the intersection copes satisfactorily. This shows that the current strategy to provide traffic signals on the Waterfront is justified.
- ▶ A design for the proposed future intersection at Cornwall Street which will provide access to and from the port has recently been commissioned. The brief makes mention of a traffic signal controlled intersection which effectively removes the need to consider grade separated facilities as has been previously proposed.
- ▶ The Westpac Stadium Trust has raised the issue of loss of revenue from 250 spaces reallocated to the ICSC, which are currently occupied by commuters on most weekdays. This will need to be resolved.
- ▶ There are differences surrounding the developers and Westpac Stadium Trust's expectation over drop off and pick up for the ICSC. The developer's team have assumed that all drop off and pick up would occur at Concourse level. However, Westpac Stadium Trust would prefer these activities to be undertaken from the ground level car park due to lack of space at Concourse level hindering turning movements, excessive waiting time for pick up and the requirement for enforcement. This currently occurs on event days.
- ▶ Traffic analysis conducted for the Concourse area adjacent to the ramps has revealed that some 20 vehicles could either be dropping off users of the ICSC or waiting for someone during a typical 15 min period within the



weekday peak hour. If this is coupled with the probability of a heavy goods vehicle making deliveries via the service lift at Concourse level and 4 or 5 mini buses either waiting or dropping off competitors, this level of usage together with their associated turning and reversing manoeuvres within a relatively constrained area, render this area unsuitable for this purpose.

- ▶ **Deliveries are also assumed to take place from Concourse level and would rely on a service lift to transport goods from Concourse level to ICSC floor level. Size limitations of the lift may prove problematic.**
- ▶ **Large events at the Stadium do lead to some congested walking conditions on certain sections of the Plaza. The worst conditions are found at the Thorndon Quay steps and also along the main plaza between the railway platform access and Thorndon Quay steps. This means that any small concert, banquet planned for the ICSC – if it was to be used for different events other than indoor sports - could not be permitted to coincide with a major event at the Stadium. It appears that any event of 34000 and above planned for the Stadium would require the ICSC to close.**



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