

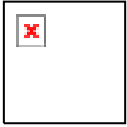
Appendix 8.05 – Traffic Engineering; Cobham Drive Park

Wellington City Council

Final Report for Indoor
Community Sports Centre

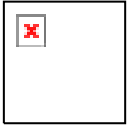
Review of Cobham Park
Proposal

April 2009



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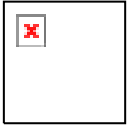
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1. Introduction

This report is intended to provide an assessment of the traffic and parking effects of the proposal for an Indoor Sports Community Centre (ICSC) to be located at Cobham Park.

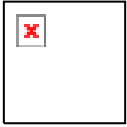
The traffic and parking aspects of the proposed development are simply one of the issues being addressed by an Independent Review Panel chaired by Sir John Anderson. The task of the panel is to select the most appropriate location for the ICSC – the choice being between Cobham Park and the Westpac Stadium Concourse.



2. Structure of the Report

The report comments on the following aspects associated with traffic and parking aspects of the proposed development

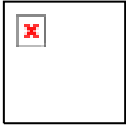
- Description of the ICSC
- Existing Site Characteristics and Traffic Problems
- Access to the Facility and Development Traffic
- Local Traffic Improvements
- Wider Network Evaluation
- Proposed Parking, Circulation and Drop Off/Pickup Issues
- Summary



3. Description of the ICSC

The ICSC has been configured to provide 12 courts capable of primarily supporting community netball and basketball or alternatively 18 volleyball courts. It will have the ability to provide for international, national and regional competitions covering these sports which effectively means the layout of the courts are reconfigured to suit whichever sport is to be provided at any given time. Other sports such as korfbal and handball can be accommodated.

The site coverage of the ICSC is 29407m² of which 13985m² is the total GFA. The brief also requested the development to have the ability to cater for a limited number of banquets per year, which is reflected in the floor area being able to provide seating for 4000. When converted for regional/international basketball or netball, the venue is able to provide for 2600 spectator seats.



4. Existing Site Characteristics and Traffic Problems

The proposed site is located immediately west of the intersection between Cobham Drive (which is state highway) and Troy Street. The present intersection is roundabout controlled. The main access to the ICSC and car park will be from Kemp Street, which intersects Troy Street, some 60m south of the roundabout. The ICSC would be constructed on land, which is presently used as playing fields for local sports

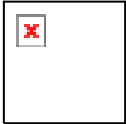
Cobham Drive is a limited access dual carriageway arterial road with a grassed central median and carries approximately 34000 veh/day.

Troy Street eventually joins with Rongotai Road which runs east - west and connects with the Kilbirnie District Centre. Both of these roads are classified as principal roads in the operative WCC District Plan and carry traffic levels of between 10000-12000 veh/day.

Kemp Street is a local road which runs between Evan Bay Parade in the west to Troy Street in the east. It serves local residential, commercial and recreational facilities in addition to providing access to the Indian Cultural Centre. The traffic levels on Kemp Street are in the order of 1000-2000 veh/day

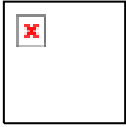
Perceived Existing Traffic Problems

- 1. The existing roundabout at Cobham Drive/Troy Street suffers from peak hour congestion, which is experienced through queues forming on approaches to the roundabout and delays when negotiating the roundabout. The worst conditions are found on the Troy Street approach, which during both weekday and weekend peaks produce observed average queues of 10 vehicles – which equates to 60 metres. Modelling of the intersection suggests a maximum queue length on this approach of 207 metres.** The problem stems from a single right turn lane on the approach to the roundabout and a single circulatory lane for the right turn from Troy Street to Cobham Drive (east). The alternative Rongotai Road/Troy Street/Cobham Drive route provides a complementary route to that of the state highway for traffic wishing to access the eastern suburbs from the south or CBD but is less attractive due to longer travel times. **The magnitude of level of congestion at the roundabout is reflected in the degree of saturation, the latter describing the ability of an approach or entire intersection to meet the expected demand. The existing roundabout has a degree of saturation of 1.012 during a weekday evening peak – which suggests that it is oversaturated and unable to provide an acceptable quality of service to its users. The critical approach is that of Troy Street.**
- 2. There is no right turn allowed from Kemp Street into Troy Street. The current layout, obliges vehicles accessing the proposed ICSC or Kemp Street from Cobham Drive to use a U-turn facility in the central median some 30m south of the Kemp Street/Troy Street intersections**
- 3. Concerns were expressed by the local community over the use of Kemp Street by heavy vehicles and the potential for Kemp Street to be utilised as a**



main means of access to the ICSC by patrons arriving from the north and west. The latter was perceived to affect the amenity value for local residents.

4. **The roundabout at Cobham Drive/Troy Street has a poor safety record with 49 crashes occurring over the five-year period 2002-2006. Eleven of the crashes resulted in injury with one of them serious.** Elsewhere, there are no significant safety issues.
5. **There is no direct pedestrian crossing which facilitates the crossing of Cobham Drive from the northern side to the southern side and which would assist both cyclists and pedestrians accessing the ICSC from the Miramar direction.**



5. Access to the Facility and Development Traffic

The Traffic Impact Assessment Report (June 2008) suggests that the total number of trips generated by the development during a weekday peak and Saturday peak are in the order of 432 and 574 single direction trips respectively, with equal proportions assumed to enter and exit the development.

This information has been gleaned from trip rates used from observed demands to and from a Hamilton facility having 20 courts, which is reported in the New Zealand Trips and Parking Database Bureau. I confirm that these are acceptable but are highly conservative as they fail to reflect diverted or passer by traffic – which would already be travelling on the road network. The trip rates assume all the traffic is newly generated and does not reflect that the existing area to be utilised by the ICSC is already used for sports games.

The predicted means of access to the ICSC by different modes of transport include (for Saturdays and weekdays respectively):

1% - 3% walk,

3% - 6% public transport

4% - 6% group transport (i.e. school minibuses)

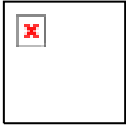
30% - 25% involves visitors being dropped off

Of the remaining demand, which is by private vehicle, an average occupancy of 1.2 to 1.3 has been assumed. It is considered that the occupancy levels indicated above are rather low and 1.5 is thought to be a much more appropriate level. However, the lower values translate to heavier flows and a worst case for analysis.

There are a number of bus routes, which ply between the central city and the eastern suburbs. The nearest bus stops to the proposed ICSC are 230 metres (in the eastbound direction) and 315 metres in the opposing direction. These are equivalent to a walking time of approximately 3 to 4 minutes respectively, which provide an acceptable and attractive level of service.

Compared with the Stadium Concourse proposal, the numbers of services are limited with some not running at weekend. However, the bus stops are much closer to the ICSC and provide a much more convenient link to public transport than that for the Stadium Concourse proposal. However, other than the limited number of services operating directly between the CBD and the Rongotai Road area, many patrons would be obliged to change bus if using public transport to reach the Cobham Park ICSC. The walking time between the Stadium Concourse and Lambton Interchange is 10 minutes and to the Railway Station 7 minutes. It is considered that the provision of the ICSC at Cobham Park could provide the catalyst for the reappraisal of bus routes serving the area with more services using Rongotai Road and enhancing the currently small percentage of patrons who make use of public transport

Whilst not located in the CBD, the Cobham Park ICSC does form part of the Johnsonville to Kilbirnie Growth Spine with the public transport services promoting and supporting residential and employment growth. **The ICSC is also only 0.7 kms from the main shopping street in**

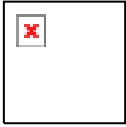


Kilbirnie, which means that any visit to the ICSC can have a multiple purpose. This should be compared with the distance of the Stadium Concourse ICSC to the centre of gravity of the CBD which is approximately 1.7 kms. As several more public transport services operate from Kilbirnie to other destinations within Wellington, it is also not inconceivable that patrons may decide to walk to and from Kilbirnie in order to make use of additional services.

Much has been made of the appeal of the Cobham facility for use by schools. **One of the distinct advantages lies with the availability of indoor sport at the ICSC to help development of children attending lower decile schools as there is a high percentage within comfortable access of the ICSC.**

However Councillor Foster's presentation to the Review Panel indicated that the number of schools within 5 kms from either the Cobham and Stadium Concourse ICSC are very similar at 48 and 45 respectively. Resident population figures from the 2006 census that live within 5kms of the Cobham and Stadium Concourse ICSC are again very similar – 98,000 and 110,000 respectively with some having equal opportunity to access both. **Therefore there is no difference in terms of student exposure between both sites. However, the key difference in exposure comes when examining working population with almost 80,000 working within the CBD – if such numbers can be believed to be captive to the Stadium Concourse ICSC.**

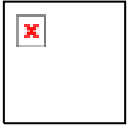
Although not immediately appreciated from the design and location of the Cobham Park ICSC, it does provide for a convenient and readily available safe access. This is a very important consideration for the parents of young school children and clearly assists in ensuring the continued use of the facility.



6. Local Traffic Improvements

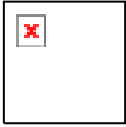
Several mitigation measures to the existing road network have been proposed as being required in order to accommodate the demands anticipated from the Cobham Park ICSC. These include:

1. An additional circulatory lane between Troy Street and Cobham Drive (west) to provide additional capacity for the right turn from Troy Street to Cobham Drive (east). Under this arrangement it would be possible to make right turns from both Troy Street approach lanes. This improvement reduces the degree of saturation of the roundabout from 1.012 to 0.775. This improvement is required prior to opening the Cobham Park ICSC and should ideally be done by NZTA now under their Block Safety Programme. The Notice of Decision on Cobham Park reinforced the need for these works in advance of construction. This improvement affords significant improvements in travel time for traffic travelling from Troy Street to Cobham Drive (east) during a weekday peak hour reducing it from 3 minutes to 1 minute. One of the drawbacks to providing additional circulatory capacity is that it improves access to the roundabout for Troy Street traffic at the expense of state highway traffic, which has less available gaps to accept and negotiate the roundabout. The effect of this can be observed from the average queue lengths, which are currently 26 and 25 metres for Cobham East Approach and Cobham West Approach and will increase to 31 and 30 metres respectively with the improved roundabout and ICSC. The queue on the Troy Street approach shows a reduction with the roundabout and ICSC of 30 metres from 58 metres currently to 28 metres. These queues are not significant
2. A right turn bay has been provided for vehicles wishing to turn right at the Troy Street/Kemp Street intersection to access the ICSC from the Troy Street exit of the roundabout. Sufficient queuing space has been provided to prevent any blocking back to the roundabout for this movement.
3. Traffic calming measures are proposed for Kemp Street to control vehicle speeds and maintain Cobham Drive's attractiveness as a preferred route for access for people accessing by vehicle from the north or west. This should alleviate the concerns of the local community over speed and safety.
4. Pedestrian improvements are proposed to Kemp Street and Troy Street. The facilities on Kemp Street aid access to the ICSC and have central islands and kerb build outs. The Troy Street facility has a median area refuge area to enable pedestrians to cross Troy Street in two stages.
5. Improved Fire Station access is likely to result of the roundabout improvements and the tracking circle of a fire appliance has been checked for the use of the proposed right turn bay to Kemp Street.
6. The issue of crossing Cobham Drive for pedestrians and cyclists wishing to access ICSC from Miramar, and northern Seatoun was raised in submissions made at the Resource Consent hearing. Subsequent modelling has shown that the demand only amounts to 1.2 peds/h and consequently, there is no justification to invest in a



dedicated grade separated crossing facility. The alternatives for crossing onto the southern side of Cobham Drive includes crossing at the traffic signal controlled intersection at Evans Bay Parade or possibly crossing at some convenient point between the Troy and Calabar Roundabouts. The subway under the airport runway is another possibility but involved additional distance and travel time.

Whilst all the above improvements will assist with capacity and turning movements, improve safety and produce a safe environment, there is one element where design standards cannot be met. This applies to pedestrians crossing Troy Street from the western side of the road. There is inadequate sight distance available to the south due to a prevailing sharp curve. The best compromise has been provided.



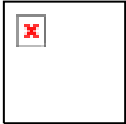
7. Wider Network Evaluation

The original traffic evaluation presented by Sinclair Knight Mertz (SKM) was focussed on the effects of the development of the local network. It was subsequently decided to extend this appraisal to cover a wider area and in particular the key components of the state highway between the Basin Reserve and the Airport. **It has to be acknowledged that the whole stretch of state highway between the Basin Reserve and Airport is an integral component of the wider Ngauranga to Airport Strategic Study which will chart the form of transport and potential transport infrastructure provision over the next 30 years.** Consequently, it is impossible to simply associate any deterioration in level of service or capacity of the state highway or associated side roads on solely the effects of the introduction of the ICSC. However, it is of concern to note the effects of the modelling which has been undertaken by SKM on a key intersection - namely that of Evans Bay Parade/Wellington Road/Cobham Drive (east) which is a key intersection providing access for all those with origins to the north and west of the Mt. Victoria Tunnel and who are intending to access the ICSC.

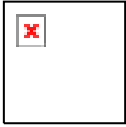
Modelling results only indicate average queue lengths for key approaches. They do show in a worst case that the average queue length on Cobham Drive (east) on a Saturday could extend from 166m to 260m with the ICSC. For Wellington Road, the average queue length increases from 103m to 145m. **These are AVERAGE queues and the maximum queue length could be regarded to be 2 to 3 times that of the average. Even the average predicted queues are unable to be accommodated within the existing right turn bays provided to each approach, which are estimated to be 135m (Cobham Drive East) and 50m for Wellington Road. This shows that expecting vehicles accessing ICSC to travel via either Evans Bay Parade or Oriental Bay will lead to significant delays and could possibly impede through traffic using the state highway. However, it is accepted that there are existing problems at this intersections which already result in the available right turn queuing space being exceeded.**

In September 2007, SKM undertook some origin/destination surveys at Hataitai Courts to ascertain where netball players origins where together with their destinations. This showed that approximately 80% had origins/destinations to the west or north of Mt Victoria Tunnel. This is an existing pattern and so it is logical to expect that any local and regional event would cause the same travel patterns to occur if game were transferred to Cobham Park. The Mt Victoria Tunnel already has a flow of 36,000 veh/day or approximately 3600 veh/h in peak hour - assuming that 10% of total daily flow occurs in the peak hour. **This equates to 1800 per lane which is virtually at capacity for a single lane and indeed it is hard to think of a two-way road with a higher value of average daily traffic in New Zealand.**

Tim Kelly cited an increase of 139 veh/h through Mt Victoria Tunnel as result of the ICSC during peak hour. It is difficult to substantiate this number even allowing for walking and cycling trips, people making use of public transport, use of mini buses and high car occupancy. **However, this amount of additional traffic using Mt Victoria Tunnel**



equates to four years of traffic growth in “one big hit”. It is clear that some of the remaining additional traffic must have been assumed to travel via Oriental Parade and possibly Newtown –which whilst being possible fails to support the road hierarchy. The Newtown route would force motorists through the highly congested Johns Street/Adelaide Road/Riddiford Road intersection, **which is one of the most congested intersections within Wellington** and then along Constable Street which is deemed to be a public transport spine. Equally travelling via Oriental Bay brings general traffic into conflict with cyclists and pedestrians. Simply loading 80% of the additional trips generated ICSC through the Mt Victoria Tunnel would result in severe congestion and capacity being exceeded. It should be realised that Mt Victoria Tunnel is now the choke point on the route to the CBD from the Eastern Suburbs since improvements were made to Basin Reserve in 1999. Consequently, there is reliance on car sharing, use of public transport, high car occupancy and use of mini buses of higher occupancy vehicles to reduce the demand and the use of alternative routes to ease the strain on the state highway. **There are improvements identified as part of the Ngauranga to Airport Strategic Study which could see dualing of the Mt Victoria Tunnel and two additional lanes provided along Ruahine Street which would add capacity to the entire route but it is unclear what is proposed for the Evans Bay Parade/Cobham Drive/Wellington Road intersection**



8. Proposed Parking, Circulation and Drop Off

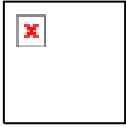
The provision of car park spaces at 319 appears to be inline with other similar developments throughout New Zealand. However, it has been raised that the number provided is at the upper end of the range expected based upon the number of courts. This said, any over provision will remove the threat of loss of space on street for local residents who have expressed such a concern.

Ease of access and circulation within car parks are fundamental to the success of any building which relies on external access for its continued use. This is certainly the case for Cobham Park ICSC.

Examination of the actual car park layout for both the surface car park and Undercroft would appear to be deficient in several respects. These include:

- **Two lanes are required at exit.**
- **The space between the entry point and turn towards the drop off point is too short and queuing back onto Kemp Street will occur**
- **The layout of the car parks which are perpendicular to the main aisle will cause delay to vehicles wanting to continue travelling along the main parking aisle or spine and who want access to or wish to exit the Undercroft**
- **Naturally the car parks near the entrance will be taken first and the very act of parking which involves turning and reversing will prevent movements to other vacant car parks**
- **People will be reluctant to use the Undercroft due to surface access problems**
- **Vehicles will be unable to circulate and access empty spaces due to problems at the entry and exit points.**
- **The ramps from the Undercroft will require a stationary hill start which could result in vehicles rolling backwards**
- **The inadequate circulation provided within the surface car park will result in patrons parking on street**
- **Why couldn't suitable drop off and facilities be provided in lay bys on street?**

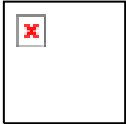
The current car park has been granted resource consent as part of the overall ICSC application. It is recommended that the above points be considered in any reappraisal of access design. This is not a showstopper – incorporation of the principles cited above would mean a new consent being sought with this being the only variation to the original approved resource consent.



9. Summary

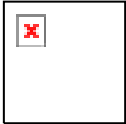
The main points to be ascertained from the Cobham Park proposal are:

- **The ICSC fulfils its intended function in serving the local community (eastern and southern suburbs) and wider city residents and provides for almost continuous access to sports facilities apart from occasional times lost due to international fixtures and banquets**
- **It could be conceived that the ICSC location at Cobham Park obliges a high proportion of patrons from the north or west (or beyond) to access via Mt Victoria Tunnel and adjacent state highway sections or through the use of other inappropriate routes such as Oriental Parade and Newtown/Constable Street. This is made worse during any regional event. Mt Victoria Tunnel is a key choke point for the section of state highway between the Basin Reserve and Airport and is at capacity. A small increase in demand could result in a large disproportionate increase in delay and congestion. However, it must also be appreciated that traffic issues (and resulting delays/congestion) on the section of state highway between the Basin Reserve and Airport do not emanate solely as a result of the ICSC development and are addressed within the Ngauranga to Airport Strategic Study.**
- **The ICSC at Cobham Park is in effect worse than the present Hataitai facilities in that it results in a net increase in travel distances due to the majority of users accessing from the north and west of the City.**
- **It is considered that the roading infrastructure improvements proposed to address efficiency and safety issues associated with the Cobham Park ICSC will achieve their objective. These include the provision of an additional circulatory lane to the Troy Roundabout to provide more capacity for the right turn from Troy Street and the ability to turn right from both lanes on the Troy Street approach to the roundabout which will reduce existing queue lengths; the provision of a right turn bay to facilitate access from Troy Street to Kemp Street; the provision of improved pedestrian facilities in Kemp Street and Troy Street to aid foot traffic and some traffic calming measures in Kemp Street to control vehicle speeds. It should be pointed out that the improvements to Troy Roundabout are warranted under present traffic conditions and the Cobham Park ICSC only serves to accentuate the problems.**
- **There are traffic and safety concerns at the nearby Evans Bay Parade/Cobham Drive/Wellington Road intersection. The right turns from Cobham Drive (east) into Evans Bay Parade (north) and from Wellington Road into Evans Bay Parade (south) are problematic and any queuing back could cause delay to through state highway movements. It is noted that the available space in the existing right turn bays is insufficient to cater for the**



average predicted queue length. However, it should be emphasised that the issues highlighted above could occur under existing peak hour conditions.

- **Access by sustainable forms of transport is supported by the proposal but is considered to be less than that likely to occur at the Stadium Concourse (in terms of total mode percentage). However walking time to and from bus stops is reasonably attractive and significantly less than the time to the Stadium Concourse ICSC from either the Lambton Interchange or the Railway Station. Consequently there appears to be scope for improvements in both the number of services and frequencies serving the Cobham Park ICSC. Service improvements will be particularly needed at weekends when the frequency is low and some current services do not operate**
- **Small buses/coaches will have to make use of the Indian Cultural Centre if r banquets or international/regional events are held at the ICSC.**
- **The Traffic Management Plans (TMP's) covering banquets and regional/international matches will require to consider the wider network and be aware of capacity issues at Evans Bay/Cobham Drive and Kilbirnie Crescent/Wellington Road intersections and Mt Victoria Tunnel limitations.**
- **The Cobham Park ICSC provides a safe and convenient at-grade access for all users.**
- **The present car park layout and circulation design could lead to access problems from Kemp Street, difficulties in accessing certain areas of the car park and internal congestion within the car park. Such issues could affect potential usage of the ICSC and it is recommended that the overall design and layout of the car park should be revisited.**



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