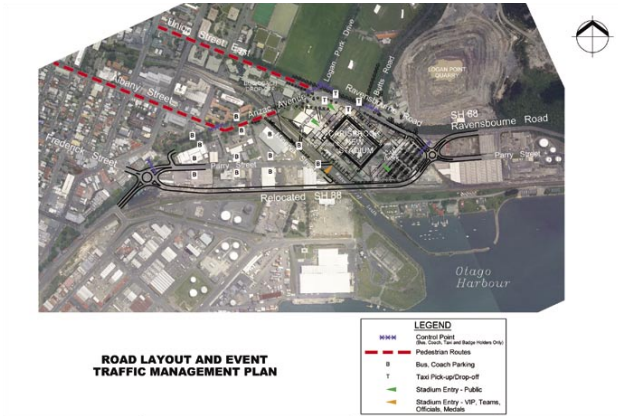

Figure 2.16. Road Layout and Event Traffic Management Plan
(see Appendices for larger scale image)

2.3.4 Traffic Management (Figure 2-16)

The following paragraphs describe at a high-level the outline traffic management arrangements appropriate for the Awatea Street site option. They include on-site parking provision, and on a mode-by-mode basis the appropriate routes, drop off and pick up points, access arrangements, parking areas, constraints and indicative requirements for new infrastructure as appropriate.

A fundamental principle of the methodology relates to on-site parking and traffic generation. Due to space constraints within the site, on-site parking during events will be at a premium and reserved for priority users including disabled visitors, corporate visitors and staff. It is not feasible or desirable to attempt to cater for the entire attendance at an event because this would represent inefficient use of land to cater for infrequent events, whilst causing high traffic generation during events. Such high traffic generation during events would require mitigation to minimise effects on the road network and this would add to the project costs, reduce safety and the overall convenience and enjoyment of attending the Stadium.

Where possible design should focus on measures to maximise the use of alternative travel modes to the private car, thus reducing on-street parking demands and overall traffic generation. Given the site's proximity to the CBD, walking to the stadium will be a priority mode, with public transport also playing an important role in meeting the needs of people travelling further distances from the outskirts of Dunedin City or beyond. Taxis can also fulfil a role, particularly for people unfamiliar with the City, whilst the private motor vehicle will possibly always be the dominant form of transport. Taxis and public transport also become more important in wet weather, when pedestrians opt for alternative transport between the city centre and the stadium.

The extent to which these modes are used also depends upon the significance of the event being held in the stadium and the related demographics of the people attending. For example, a Highlanders or All Black match is far likelier to attract high numbers of out of town visitors, whereas an Otago match in the Air New Zealand Cup is likely to attract a mainly local attendance.

In contrast, daytime on-site parking should aim to fully meet the regular and frequent demands expected from the use of the site in order to minimise overflow onto surrounding streets. Trips generated by these land uses should also be quantified and managed to mitigate their effects on the surrounding network. This will be done more formally in a traffic impact assessment and traffic modelling forming the assessment of environmental effects (AEE) at the next stage. However, these issues are recognised at this master planning stage in order for them to be accommodated as part of ongoing project development.

Public transport, walking and cycling may be a more feasible alternative travel option for people coming to work or study at the site since they are a regular trip, so these opportunities should also be considered in the day to day operation of the site. The site's location close to the University campus lends itself to the promotion of walking and cycling in particular, which should reduce on-site parking demand.

Parking

'EVENTS' ON THE SITE

Recreational activities are a Permitted activity under rule 10.5.1 in the Dunedin city District Plan. Rule 10.5.2 (ii) requires minimum car parking for recreational activities. Recreational activities in this instance and given the intent of the rules would be governed by point (d)(ii) indoor activities. This requires 1 park / 20m^2 PFA or 1 park per 10 seats whichever is the greater, plus 10% for staff.

Capacity = 30,219 so visitor requirement is 3,022 car parks, staff requirement is (10%) 302, disabled requirement is 66. Total = 3,390 car parks.

OR

GFA=54,500m^2 assume PFA is 75% GFA, PFA=40,875m^2, so visitor requirement is 2,044 car parks (not sensitive to PFA assumption). Staff requirement is 204, disabled requirement is 45. Total requirement is 2,293 car parks.

TOTAL - 3,390 car parks required for events.

'Daytime activity' on the site

This calculation utilises definitions and rules from the District Plan considered appropriate in the circumstances, as there is no set of rules that specifically relate to the proposed activities in an Industrial Zone. Daytime effects occur with high frequency, as opposed to the low frequency of an event, and should be adequately catered for.

Commercial activity rules – 1 park / 20m^2 GFA for visitor parking and 1 park / 100m^2 GFA for staff parking. The campus parking protocol governs educational activities parking provisions.

Approximately 5,575m^2 of commercial space requires 279 spaces for visitors and 56 spaces for staff, with 7 disabled spaces, making 342 car parks total.

The campus parking protocol relates to increases in student and staff numbers, rather than building GFA. The following assumptions have been made in determining the number of car park spaces required for the University. Given the proximity of the University we would suggest an allowance is made of half the rate for staff at commercial premises, i.e. 1 car park / 200m^2.

Approximately 9,660m^2 of educational space requires 49 car parks with 5 disabled spaces (@ 10%), making 54 car parks total.

TOTAL - 396 car parks required for daytime activity.

The provision of 3,390 car parks required under district plan parking rules is clearly not desirable or feasible for a number of reasons:

1. The space required (8.5-9 ha) is prohibitive.
2. The land used would be vacant most of the time, representing inefficient and infrequent utilisation of a scarce and expensive resource.
3. Such a number of parks would encourage car trips to the site, causing congestion around the road network, reducing safety for pedestrians and

increasing mitigation costs.

The fundamental issue in relation to the provision of parking at this site is to provide sufficient numbers only to mitigate the effects of parking demand in relation to the day to day high frequency activity associated with the site, namely the educational and commercial activities.

Given the likely low frequency (perhaps once or twice per year) occurrence of events attracting very significant numbers of people (i.e All Blacks games), and the absence of significant residential settlement in the immediate vicinity, the effects of events will be significant but acceptable given their low frequency. These event effects should be mitigated by limiting the availability of parking on and around the site to a minimum and implementing an event management plan that enhances the convenience and safety of walking to the stadium and assists buses, coaches and taxis to access parking areas near to the stadium. Car parking in relation to events should cater only for disabled visitors, staff and corporate visitors. The latter is essential for the commercial viability of corporate facilities.

The requirement for day-time activities of 396 car parks can be reduced to 342 spaces, as education activities are governed by a parking protocol between the City Council and the University, which it is understood following discussions with the Council will not be triggered by this development.

Currently the site plan indicates approximately 300 on-site car parks. This is 42 parking spaces less than required for day-time activities on the site. However, this number of parking spaces is expected to be sufficient for the use at the stadium for both day-time activities and events. Reviewing two development guidelines used in New Zealand, shows a lower peak parking demand for commercial activities than the Dunedin City District Plan requirements:

- New Zealand Trips and Parking Database Bureau – 2.8 spaces per 100m^2 GFA, which equates to a requirement of 156 spaces; and
- RTA Guide to Traffic Generating Developments – 1 space per 40m^2 GFA, which equates to a requirement of 140 spaces.

To cater for events at the stadium 300 parking spaces will be required for disabled visitors, staff and corporate visitors.

Private vehicle access

For every day activities on the site access is good as the stadium will be well located within the road network. Vehicular access to the site is described in Section 2.3.3.

For events an event management plan is proposed that caters for each travel mode, but particularly aims to minimise traffic movements within the immediate area around the stadium, improve pedestrian movements and minimise disruption to through traffic. This plan is shown in Figure 1 (a larger scale drawing is attached in the Appendix) and described below on a mode by mode basis. The plan is essentially characterised by road closures or control points around the stadium that limit vehicular movement to buses, coaches, taxis and badge holders such as corporate visitors, disabled visitors and land owners within the event management plan zone. These control points are manned for perhaps two hours prior to the event happening and for one hour after the end of the event. Dedicated drop off, pick up and parking zones are also identified within the plan that are convenient for operators and visitors, but also lead to movements by different vehicles that are conducive to a safe environment in which pedestrians can move around the area and enjoy the new stadium experience.

Public transport

Public transport in the context of this report includes the public transport system in Dunedin, as well as buses and coaches privately chartered, but not taxis. Taxis are discussed below separately as they have different characteristics and requirements. Public buses are discussed first, followed by privately chartered buses and coaches.

Dunedin is currently well served by a comprehensive network of public transport services that link most suburbs to the Octagon. Some services also extend greater distances to connect the communities of Portobello, Port Chalmers, Mosgiel and Brighton. The current Carisbrook Stadium is well located within this network, in so far as all services approaching the downtown area from the South pass within a short distance of the stadium. Passengers from the North of the city are required to interchange between buses at the Octagon. The Awatea Street site, however is not well located within the current network, being served only by the Port Chalmers service. All services but this one require passengers to interchange at the Octagon to reach the stadium. This would be a distinct disincentive for many local people to use the public transport system to get to an event, whilst also being overly complex and involving too much mental and physical effort for someone from out of town to work out. Discussions would therefore need to take place with the local bus company to secure more services to serve the stadium. Another solution would be to provide free or cost effective and well promoted shuttle services from the Octagon to the stadium via the most direct route possible, but possibly also serving key attractions along the way such as bars and restaurants, either as part of the route or as a separate route. For such a route, frequencies could be adjusted on a event-by-event basis depending upon the type of event and the prevailing weather conditions that may make pedestrians more inclined to seek an alternative mode.

A similar service is provided in Christchurch between the bus exchange and Jade Stadium, with passengers paying $1. In Dunedin the shuttles would approach the stadium via Frederick Street and Anzac Avenue and drop off passengers within a bus drop off zone along Minerva Street, returning to the CBD via Parry Street and Frederick Street. Passengers would then walk the short distance to the stadium via footbridges crossing the Leith River. The drop off area would also be the pick up point for passengers after an event as it makes it easy for passengers to remember where to wait.

The drop off / pick up along Minerva Street brings visitors to within a short walk of the stadium, making the shuttles a convenient and attractive alternative to the car, without the hassle and time involved in finding a car park and walking some distance to the stadium.

It is understood the current Carisbrook Stadium attracts a significant number of chartered buses and coaches for an All Blacks game, representing up to 4,000 people. This shows a strong tradition among clubs, pubs and schools to arrange group transport to rugby matches, so this should be encouraged and built on by providing priority access and parking for these vehicles as close as possible to the stadium. Similar to shuttles from the CBD, Anzac Avenue, Minerva Street and Parry Street offer a convenient drop off, pick up and parking zone for chartered buses and coaches.

Vehicles from SH 88 East of the stadium would approach Minerva Street from the proposed new roundabout East of Butts Road, passing through a controlled entry at the North-West arm of the roundabout that would only allow buses, coaches, taxis and badge holders access. These vehicles would then proceed West along Anzac Avenue and turn left into Minerva Street to park here or in Parry Street, or proceed along Anzac Avenue West of Minerva Street to park. Vehicles not staying in the area during the event would leave via Parry Street for routes North, South and West, or via Anzac Avenue and Ravensbourne Road for SH88 towards Port Chalmers. Upon being dropped off, passengers would make their way to the stadium over the footbridges described above.

Pedestrians

Given the Awatea Street site's excellent location relative to the CBD and University campus, walking to and from the stadium will be a popular means of travel and should be appropriately encouraged and planned for through supportive traffic management that ensures the convenience and safety of pedestrians. People driving to the vicinity will also aim to park close to the stadium and walk the final few hundred metres. To the North side of the stadium a number of parking areas exist including along Union Street East and potentially along Butts Road and around the Logan Park High School, as well as on-street around the campus. The harbourside industrial area is also likely to be a popular location for park and walk. The walking route between the harbourside and the stadium would be via a DCC proposed walkway and cycleway linking the eastern end of Wickcliffe Street to the southern end of Minerva Street, passing under the relocated SH88 bridge over the Leith River.

The traffic management plan for the Awatea Street site indicates the two particular routes likely to carry significant volumes of pedestrians prior to and immediately following an event. Pedestrians will take these routes to reach the campus area and the Octagon, via Clyde Street, Castle Street and Cumberland Street. Road closures at Parry Street / Frederick Street; Union Street East, Albany Street and Logan Park Drive at Anzac Avenue; Butts Road at Ravensbourne Road and Ravensbourne Road at SH88 will create a virtually traffic free environment around the stadium that will be safe for the large numbers of pedestrians that will be circulating the area to access the correct gate to the stadium bowl. The only vehicles in this area will be taxis, buses and coaches and approved cars.

Taxis

Taxi drop off and pick up areas are located on both sides of Anzac Avenue to the North-West of the stadium. This area represents a total kerbside length of approximately 300 metres, providing enough space for up to 40 taxis at any one time. Depending upon the scale of the event and the uptake of bus parking along Anzac Avenue, further space could be made available for taxis.

Taxis would generally be ferrying people between the CBD and the stadium via Frederick Street, Parry Street and Anzac Avenue. Their return trip would also generally follow this route however any route would be available via the control points around the stadium, through which taxis would retain access.

SH 88 Realignment and Through Traffic Movement

The DCC Transportation Strategy proposes to realign SH 88 away from Anzac Avenue further South along Parry Street, constructing a new bridge across the Leith River and connecting with Ravensbourne Road approximately 150m East of Butts Road.

However, the new stadium will require SH 88 to be realigned further South than Parry Street.

The proposed realignment will commence at the existing Frederick Street / Anzac Avenue / Ward Street overbridge intersection. It is proposed to install a two lane, four-arm roundabout at this intersection. The four arms of the roundabout will consist of the proposed new St Andrew Street extension / overbridge, Frederick Street, Parry Street and the realigned SH 88. Anzac Avenue will not have any connections to the roundabout. However, the existing link between Parry Street and Anzac Avenue will be utilised to provide access from Parry Street to Anzac Avenue. This intersection will be located approximately 60m East of the roundabout.

From the roundabout, SH 88 will run adjacent to the rail corridor behind the existing properties on Parry Street. A new road bridge will be constructed across the Leith River and the State Highway will run between the proposed Awatea Street site and the rail corridor before curving northwards and joining up with Ravensbourne Road. A roundabout is proposed halfway between the rail corridor and Ravensbourne Road to provide access to the Logan Point Quarry, the stadium site and the eastern end of Parry Street. This roundabout is currently proposed to be a one-lane roundabout. However an intersection traffic model should be run to confirm capacity of this roundabout especially during large events. It is possible that an additional northbound approach lane on SH 88 will be required to cater for left turning traffic during large events at the stadium.

The cross section of the State Highway needs to be confirmed with Transit NZ. However, from initial discussions with Transit NZ and DCC limited access to pedestrians and cyclists is preferred along the highway. Therefore the only pedestrian / cyclist path proposed along this section is across the new road bridge, with one 3m path proposed along the eastern side of the bridge. This path will connect with the proposed pedestrian and cycle paths that will traverse under the road and rail bridge on the southern side of the Leith River, and the cycle path that will traverse under the rail bridge and out towards the boat harbour on the northern side of the Leith River. This will provide a connection between the streets on either side of the State Highway and rail corridor.

The Ravensbourne Road realignment will provide access to SH 88 from the stadium car park and Logan Point Quarry. The stadium car park access will be located approximately 70m West of the new roundabout. Moving the SH 88 alignment further South due to the proposed stadium means that the Quarry will have to travel an additional approximately 300m to reach the Frederick Street roundabout. However, the intersection connecting with the State Highway will be safer, as under the Transportation Strategy proposal a 'T' junction will be constructed at Leander Street, whereas under this proposal a roundabout will be constructed, providing safer turning for traffic leaving the quarry and travelling South along SH 88.

One main issue that needs to be investigated further as part of this proposed realignment is access to the Boat Harbour. Currently this is accessed via Magnet Street and an at-grade crossing of the rail corridor. Two options should be considered further, being:

- A new access road and at-grade level crossing off SH 88 approximately 70m South of the new roundabout; or

- A new access road from the eastern end of Parry Street. This is the preferred option, if land could be purchased.

During events there will still be through traffic using SH 88, travelling between Central Dunedin and Port Chalmers. The main impact on this traffic during a large event will occur at the two proposed roundabouts. At the Frederick Street roundabout through traffic will still be able to continue along the State Highway without significant delay due to the roundabout having two-circulatory lanes. However, delays to through traffic may occur at the roundabout adjacent to the stadium due to possible queues from vehicles entering the stadium car park. These delays are expected to be short and may be able to be mitigated by the inclusion of an additional northbound approach lane at the roundabout. As discussed above intersection modelling should be completed at this roundabout to confirm if an additional approach lane will be required.

Cycles

Currently DCC are investigating various cycle path options in the vicinity of the Awatea Street site. Figure 2-13 in Section 2.3.3 showed the proposed 'Vision for Cycling Routes through the Harbourside Area'. Connections to these paths will need to be provided from the site. The proposed change to the alignment of SH 88 may require some changes to be made to the existing cycle path options. The possible changes are detailed below:

- Currently the vision shows an on-road arterial cycle route along the SH 88 realignment. This route may need to be changed depending on the preferred access limitations along the SH 88 realignment i.e. it may be preferred to limit access to cyclists / pedestrians. If this is the case the on-road arterial cycle route and non-arterial cycle route to central city (along Anzac Avenue) may need to be combined; and
- The vision shows a connection from the Harbourside cycle / walking route at the Leith River, traversing down Minerva Street. More investigation of how these two paths will connect is required, but currently it is proposed that the new road bridge will have a shared cycle / pedestrian path across the eastern side of the bridge, which will connect with a cycle / pedestrian path traversing under the road and rail bridges.

2.3.5 Stadium Uses

The stadium, if designed with the fully enclosed roof and South and East stands as described above would in effect create one of the most multi use, flexible stadia in the world. The facilities described above allow for the integration of the University of Otago facilities and possibly Unipol as well as offering the additional flexibility of accommodating major non-event day usage such as conventions and exhibitions.

The uses of the stadium can be defined into two sections, the use of the actual facilities and the ability to attract other major events. The following lists identify some of the opportunities offered by the proposed stadium:

Stadium Field of Play

The following activities can occur on a natural turf playing field.

- International Rugby Tests
- Rugby Super 14
- NPC
- Regional rugby and soccer matches.
- Local School and Community Rugby and Soccer Finals
- International Soccer
- All Weather elite sports training for national and professional teams.
- Concerts and major entertainment events such as Edinburgh Tattoo (with appropriate protection of the playing surface)
- Corporate Games.
- Outdoor Cinema.
- Religious Gatherings (Pope Visit, Dali Lama etc) and Royal Visits.
- Extreme Games (Skateboarding, BMX etc)
- Equestrian Event
- International Polo Championships

Should the field of play be designed over a concrete tray with a palletised surface which could be stored in Logan Park, additional activities could occur within the playing area. These are as follows:

- 11,000m^2 exhibition hall
- Tennis
- Motor Cross
- Swimming
- Speedway
- Long Course Speed Skating
- Film Studio

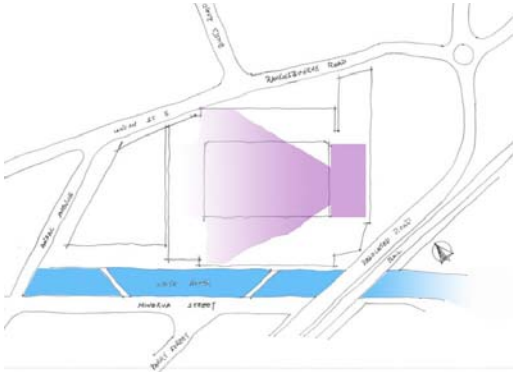

Figure 2-17. Concert mode

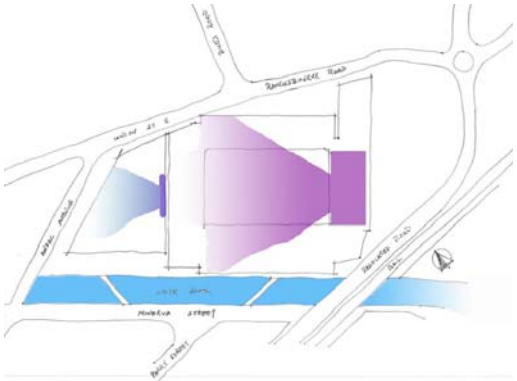

Figure 2-18. Concert mode – potential for external viewing in Plaza

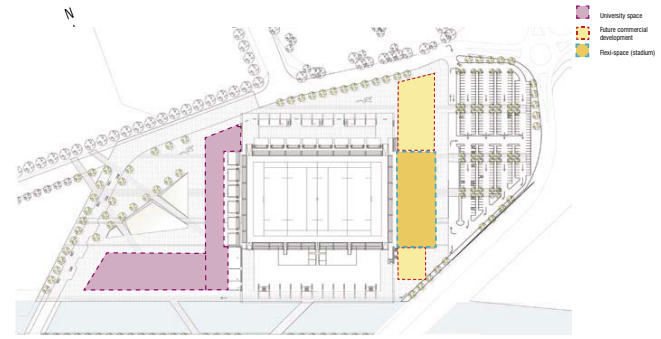

Figure 2-19

Stadium Accommodation

West Stand	Spectator facilities for events (sport or concerts), University facilities
North Stand	Spectator facilities for events (sport or concerts)
	Approximately 1,000m^2 of commercial office space
East Stand	Temporary and Permanent spectator facilities for events (sport or concerts).
	Gymnasium, exhibition or other flexible uses. The stand can be closed off using a sliding folding wall system to fully separate the gym spaces from the stadium. The seats located within the proposed multi use gym space are to be removable to allow for the space to function all year round.
	Potential exhibition space.
	Potential use for concert staging (refer Figure 2-17 & 2-18).
South Stand	Spectator and team facilities for events (sport or concerts)
	Potential use of the members' lounges and private boxes by the University as seminar rooms and tutorials
	Potential use of the members' lounges and private boxes by the conference/commercial facility as seminar rooms and break out spaces.

In addition to the above the blade walls designed to enclose each of the stands could also be designed to accommodate climbing walls, allowing the stadium to also accommodate one of the worlds largest indoor climbing centres.

Potential Major Events

As well as the obvious desire to host major pool games for the 2011 Rugby World Cup and future Category B Rugby Tests the stadium could be part of a wider Southern region and New Zealand bid for the following major events:

- Commonwealth Games (Co-host with Christchurch)

  Rugby 7's
- Part of facility requirements to bid for a future Winter Olympics (Long and short course speed skating, opening and closing ceremony, ice skating).
- Pacific Island Games
- Pan Pac Swimming Championships (with temporary pool)

2.3.6 University Integration

A key component of the the new stadium development Masterplan on the Awatea Street site is to provide an integrated precinct that is utilised not only during events but day to day. Being located right next to the University of Otago precinct as it stretches along Union Street, the Awatea Street site provides a unique opportunity to integrate the development of the new stadium development with facilities for the University of Otago.

This provides two key benefits to the development as a whole:

a) The precinct becomes inhabited throughout the week becoming a vibrant part of the city.

b) It allows the University to extend its growing requirements and create a focal node at the eastern end of the campus to complement the centre of the Campus towards the West.

At present, discussion with the University of Otago has explored a number of University activities that can be located within the Stadium precinct. These include general academic space, University student support activity spaces and the possibility of space for Unipol. The University is committed to the provision of a 7,000m^2 building to be located on the western Quadrangle of the stadium precinct. The masterplan has indicated an option for Unipol facilities being located adjacent to the University facilities. Depending upon configuration it may be possible to provide up to 7,000m^2 of University space, 6,400m^2 of space for Unipol and provide a zone for development of up to a further 8,000m^2 of University expansion space to cater for future growth. A more detailed description of the facilities provided for the University and how these are integrated onto the precinct is covered in section 2.4. (see Figure 2-19)

2.3.7 Facility Services

Facilities to NZRU/ORFU recommendations and to allign with modern day stadia, University and commercial standards.