

Figure 2-6. Site Plan (see Appendix for larger plan)

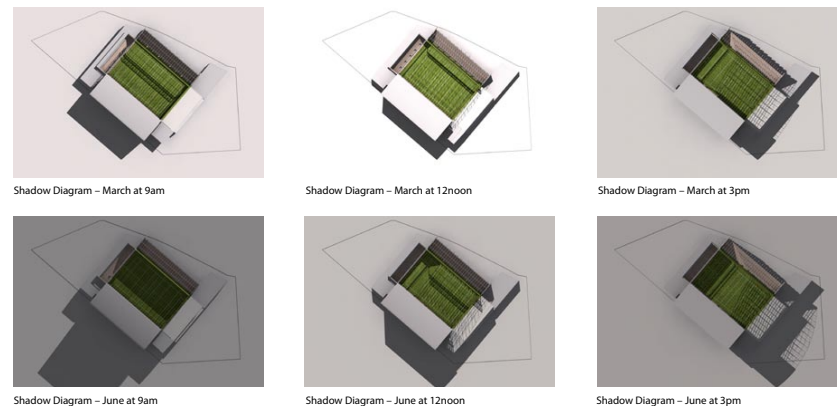


Figure 2-7. Sun Path Studies

2.3 Facility Design

2.3.1 Layout and Orientation

The stadium is proposed to be on a NW-SE orientation, parallel to the Leith River (Refer Figure 2-6). This orientation has been developed to maximise the land usage on the site and to orientate the stadium to facilitate access and egress into the facilities. The traditional orientation in relation to international standards has generally been to orientate stadia with the long axis of the field North South allowing the main stands to be located East and West of the field. This tradition arose due to the historical nature of soccer and rugby in the northern hemisphere which saw games being played on Saturday afternoon. The traditional orientation ensures that no team is disadvantaged by playing into the setting winter sun and that the main stand located on the western side of the ground provided shade to the field during the afternoon. In time with the advent of television this orientation also allowed television coverage of the game to be done without filming into the sun.

The majority of Super 14 and International Test Rugby matches are now played in the evening due to the demands of peak television viewing and the move towards evening entertainment rather than Saturday afternoon. This has seen the need for the traditional orientation diminish with greater emphasis instead placed on the need to gain sufficient solar penetration to the field of play to encourage natural grass growth.

Benchmarking of the proposed field orientation in New Zealand has been undertaken with the following findings:

Palmerston North	SW-NE orientation
Westpac Stadium	N-S orientation
Hamilton Park	N-S orientation
Jade Stadium	N-S orientation
Ericsson Stadium	N-S orientation
Eden Park	E-W orientation
Carisbrook Stadium	NW-SE orientation

The issue of field orientation was raised with the New Zealand Rugby Union who have confirmed that the field orientation should not present an issue but that further discussions would be required with SKY Television in relation to television coverage. This will occur during the next stage of the project but at this stage based on the orientation of Eden Park being acceptable to SKY Television and other broadcasters it is not envisaged that the field orientation will present difficulties.

Preliminary shade studies have been undertaken to investigate the extent of shading and solar penetration on the field. The massing of the building has been designed to facilitate the maximum solar orientation to the North, East and West with the main stand located to the South. The preliminary shadow diagrams as shown in illustration Figure 2-7 have indicated shading will exist during the winter months. However, compared to other stadia, the shading can be considered much less due to the nature of the design. Further studies during the next stage of the project will need to investigate the impact further.

The stadium comprises of 4 spectator stands, North, East, West and South. The South stand is proposed to be the only fully serviced stand accommodating corporate

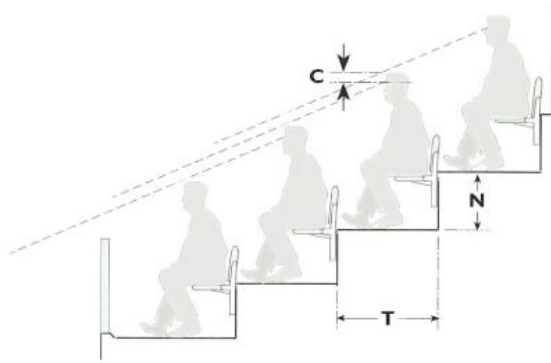


Figure 2-8: Sightline Analysis Diagram

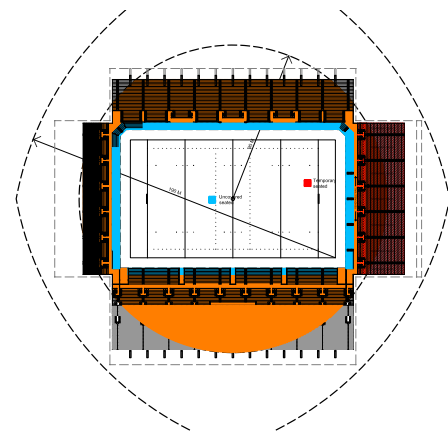


Figure 2-9: Bowl Plan showing optimum seating

suites, members' lounges, team and media facilities. The South stand is proposed to be two tiered, whereas the North, West and East stands are proposed to be single tiered. The North and East stands are all seating, with the Eastern tier being temporary only used for those games where a full 30,000 capacity is required. This enables the Eastern Stand to be flexible and used for other purposes (see sections 2.3.5 and 2.3.6). The Western tier is proposed to be a standing terrace. The North, East and West Stands are significantly shorter than the South Stand to allow for more natural light to the pitch.

The master plan for the combined new stadium development and University of Otago facilities on the Awatea Street site has been developed to maximise the following opportunities:

- To enliven all edges of the precinct with activity so that the facility supports surrounding regeneration.
- To provide a major urban pedestrian plaza to the East end of the site a city and University focal point for the eastern edge of the central city.
- Through the realignment of SH 88, the northern end of Anzac Avenue can be downgraded in terms of traffic.
- By allowing better integration of vehicular and pedestrian uses along the northern end of Anzac Avenue, Logan Park will be better connected to the central city and the new University facilities will become an integrated component of the University of Otago Campus.
- To provide clear linkages for all modes of transport, from walking to bus, into the site's facilities.
- The masterplan has been developed on the basis of providing an integrated facility for the new stadium development together with The University of Otago and other commercial spaces.

On the western side of the site a major urban plaza is proposed. This space will function as the major pedestrian connection and arrival gateway to the Stadium from the centre of Dunedin. Major access points to the Stadium are located off this plaza. As well as providing a vibrant and dramatic entry for events, the plaza provides a major community and University asset at all times. As an urban landscaped space it will become a focal and gathering point for the North eastern sector of central Dunedin.

It is proposed that a major University building will be located on the plaza, generating all week activity and providing a gateway to the eastern end of the University of Otago Campus.

A smaller pedestrian precinct is provided along the northern flank of the Stadium. Located across the road from Logan Park, the proposal allows for the provision of commercial spaces to be located along this edge, possibly with synergies to the provision of sport to the Otago Region.

On the eastern side of the Stadium, the major facility car park is provided. As well as providing for VIP parking during events, these car parking areas will allow the stadium facilities to be utilised for weekday functions, wedding parties, large meetings and the like.

Adjoining the Stadium at the Eastern end, the masterplan shows an integrated building on this side of the site providing an eastern stand which will be used for major international games, but which can be utilised for other purposes for the remaining times. Gymnasium space is shown as the integrated facility on the masterplan but other options such as use of this space for exhibitions is also possible.

2.3.2 Standards

This Facility Brief and masterplan concept has been developed through a process of consultation with Arrow International, Carisbrook Stadium Trust and recommendations based upon HOK Sport Architecture's extensive experience with the design and development of stadia around the world and within New Zealand and Australia. Reference has also been made to the following documents and publications:

- “Stadia: A Design and Development Guide” by Geraint John and Rod Sheard.
- “Guide to Safety at Sports Grounds (the Green Guide)”. Fourth edition – 1997.
- NZRU Minimum Test Rugby Facility Requirements (as advised February 2007)
- New Zealand Building Code (NZBC).
- Australian / New Zealand Standard AS1428.1 and AS1428.2.
- FIFA / UEFA Construction of Football Stadia – 1995.
- “Toilet Facilities at Stadia – Planning, design and types of Installations” published by the Football Stadia Development Committee (FSADC) – 1993.

Key aspects of the design to create a world class venue have been adopted from the above documents and based on the international experience of HOK Sport Architecture. These have established the following key design parameters:

- The sightline from the eye level of every spectator shall not be inferior to the following criteria as defined below. The eye level at each spectator is defined as a point 1200mm above the floor level and 150mm forward of the rear of each seating plat, centred on the seat location.
 - Minimum ‘C’ value to be 60mm. (Refer Figure 2-8)
 - All sightline ‘C’ values listed for pitch sports are to be calculated from the focus point which is to be as a minimum the nearest point of the touchline at pitch level for rugby union and half way between the dead ball line and try line for seats behind the goal line.
- The ‘high ball’ line shall be 18m at the center of the field and behind the goals.
- The seating bowl and standing terraces shall be designed in accordance with the recommendations of the “Green Guide” with 28 seats located between aisles and 14 seats located in a row where served by a single aisle.
- All seats and standing terraces shall be within a viewing arc of 190m from the opposite corner flag from where viewed (Refer Figure 2-9).
- Disabled provision shall be based on the following:



Figure 2-10. Site Location

- 0.25% of capacity for wheelchair positions
- 0.25% of capacity for enhanced amenity seats

2.3.3 Connection to the City

The proposed Awatea Street site is located on the southern side of Anzac Ave / Union Street East, which forms part of SH 88 connecting Central Dunedin with Port Chalmers. Figure 2-10, Figure 2-11 and Figure 2-14 show the proposed location of the Awatea Street site in relation to the city, surrounding road network and also the proposed location of the realigned SH 88 and connection to the stadium.

As a stadium facility, the new stadium will be a large generator of movement to and from the city and region on event days. During non-event times, the other integrated facilities and uses for the precinct will provide traffic movement and activity.

By being located approximately 1.5km from the Octagon access to events by most will be on foot. This will create both enhanced opportunity for businesses within the central precinct, cafes, pubs and the like as well as allowing new business opportunity as the Harbourside development is regenerated. The pedestrian route is likely to predominate along Anzac Avenue, Union Street East and Albany Street, allowing an opportunity to further enhance the landscape along these streets.

Access from the site to the remainder of the University of Otago can be by both Union Street East and along the Leith River. Beautification of the Leith River will turn it from a storm water overflow into a major recreational asset for the city.

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, with the alignment running adjacent to the rail tracks, as shown in Figure 2-10. The relocation of the State Highway from Anzac Avenue will remove a significant amount of vehicular traffic from this area, thereby allowing increased traffic management during events, and much improved pedestrian connections both during events and on a day-to-day basis. This proposed realignment is discussed in more detail in Section 2.3.4.

Connection from the Awatea Street site to the city and beyond is described below. These connections relate to the day-to-day operation of the site. During events certain roads approaching the site will be closed to general traffic, with access reserved for badge holders, buses, coaches, taxis and pedestrians only. This is discussed in more detail in Section 2.3.4.

This site has excellent connections with central Dunedin and the Octagon located approximately 1.5km from the site. There are a number of routes that can be taken between the site and the central area. It is envisaged that the main vehicular routes will traverse the SH 88 realignment onto Frederick Street, and either onto the SH 1 one-way pair or George Street or along the SH 88 realignment South of Frederick Street, onto the new Harbour Arterial, and then onto St Andrew Street at the at-grade rail crossing.

Currently Frederick Street is classified in the Dunedin City District Plan as a District Road from Anzac Avenue to SH 1 northbound, and as a local road from SH 1

northbound to George Street. George Street is classified as a District Road for its full length. St Andrew Street from the rail crossing to George Street is classified as a Regional Road.

It is envisaged that following the realignment of SH 88 and changes to the Harbour Arterial a number of roads in the vicinity of the Awatea site will be re-classified, which may include Frederick Street, particularly the section from SH 1 northbound to George Street. Figure 2-12 shows the current road hierarchy in Dunedin.

City North i.e. North-East Valley / North Dunedin

There are a number of options for connection between the site and the northern suburbs of Dunedin via the East – West connector roads of Dundas Street, Albany Street and Frederick Street, which run off the SH 1 one-way pair. It is envisaged that Frederick Street will provide direct access to the stadium but Dundas Street could provide access to possible off-site parking locations in Logan Park and on Butts Road.

Currently Dundas Street, Butts Road and Albany Street are classified as Collector Roads excluding the section of Albany Street between Forth Street and Clyde Street, which is not classified i.e. it is a local road. Albany Street can provide direct access to the Awatea site via Anzac Avenue, however following the relocation of SH 88 and the likely use of Anzac Avenue for bus parking, (see Section 2.3.4), it is not the preferred vehicular traffic route to the site.

City South i.e. South Dunedin / St Kilda / Caversham

Road connections between the southern suburbs of Dunedin and the Awatea Street site are expected to be via the district roads in the South Dunedin area, Macandrew Road, Hillside Road, King Edward Street, and Andersons Bay Road, onto either the SH 1 one-way pair and then onto Frederick Street or the Harbour Arterial via Strathallan Street connecting with SH 88 at the new roundabout.

Currently, Strathallan Street and the Harbour Arterial, which consists of Portsmouth Drive, Wharf Street, Thomas Burns Street and St Andrew Street, are classified in the district plan as Regional Roads.

City West i.e. Roslyn / Kaikorai / Mornington

There are a number of options to access the site from the western suburbs of Dunedin via some of the East – West connector roads such as High Street, Stuart Street / York Place, and London Street. All of these roads connect through to George Street and the SH 1 one-way pair. The two main links through from SH 1 and George Street are expected to be St Andrew Street and Frederick Street, onto the SH 88 realignment.

Stuart Street and York Place are classified as Regional Roads, which connect through to St Andrew Street and onto the harbour arterial. High Street and London Street are both classified as District Roads.

City East i.e. Andersons Bay / Waverley / Macandrew Bay

The city East suburbs, which are located on the opposite side of the harbour to the Awatea Street site, will connect with the site via Portobello Road, Portsmouth Drive and onto the Harbour Arterial route, connecting at the proposed new roundabout at the SH 88 realignment.

Portobello Road and Portsmouth Drive are both classified in the district plan as District Roads.

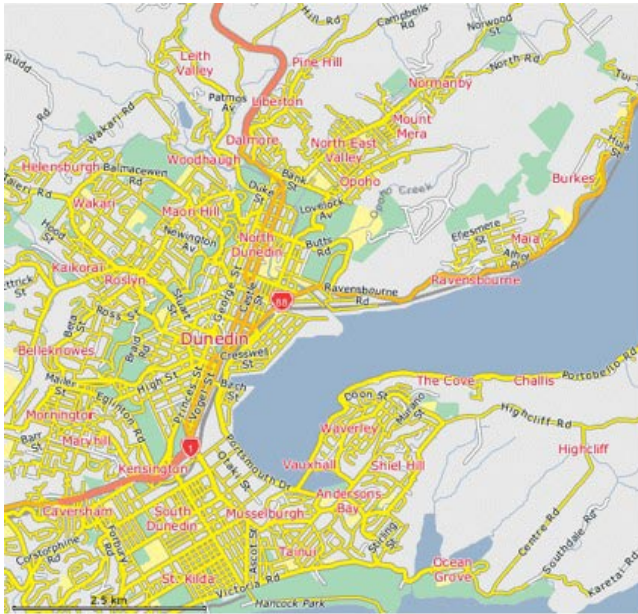


Figure 2-11. Overview of Dunedin City



Figure 2-12. Road Hierarchy

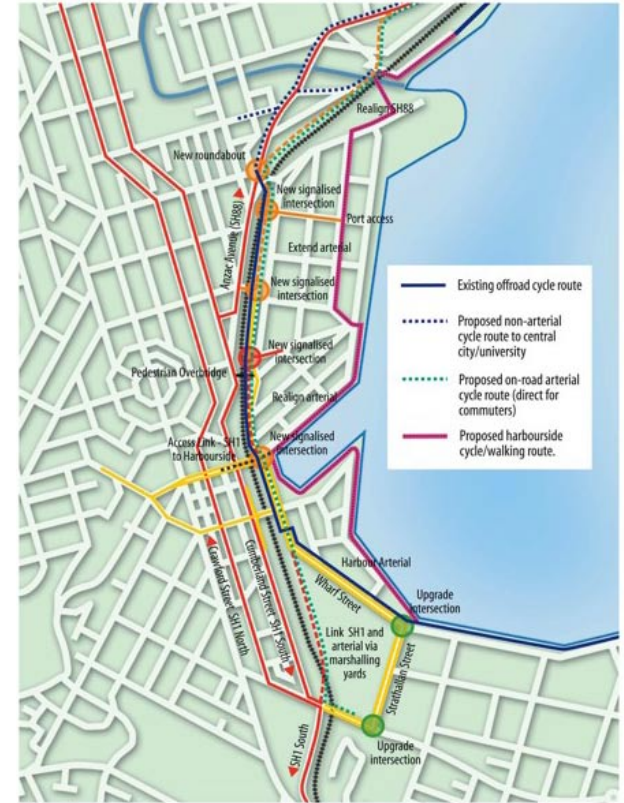


Figure 2-13. Proposed Vision for Cycling Routes

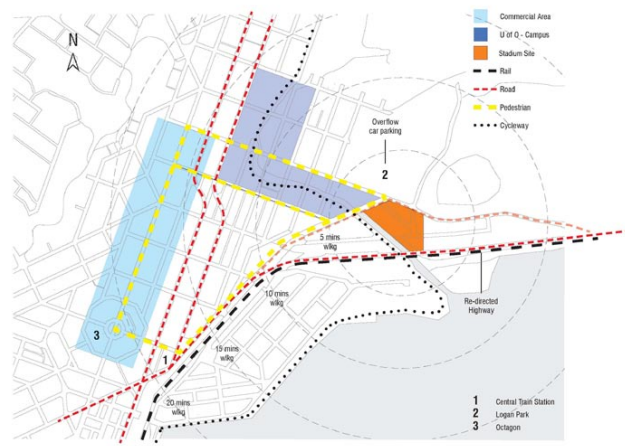


Figure 2-14. City Context - Movement

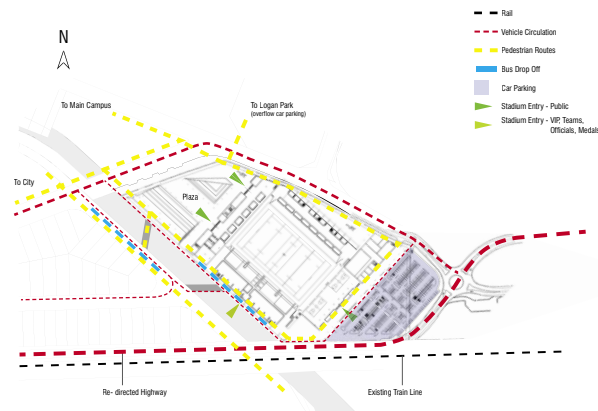


Figure 2-15. Site Context - Movement

Port Chalmers / Aramoana

Access between the site and Port Chalmers / Aramoana will be via SH 88 and the new roundabout just East of the site.

North via SH 1 i.e. Oamaru / Timaru / Christchurch

Connection with centres North of Dunedin will be via the SH 88 realignment, onto Frederick Street, and onto the SH 1 one-way pair and vice versa. The one-way pair merge in North Dunedin at Pine Hill Road / North Road.

South via SH 1 i.e. Mosgiel / Invercargill / Queenstown

Connection with centres South of Dunedin, such as Mosgiel and further afield to Invercargill and Queenstown, will again be via the SH 88 realignment, onto Frederick Street, and onto the SH 1 one-way pair and vice versa. The one-way pair merge in South Dunedin at Andersons Bay Road. Another alternative route South is via the harbour arterial roads, onto Strathallan Street and then onto Andersons Bay Road before connecting up with SH 1.

Other Connections

The stadium on-site parking will be accessed via the Ravensbourne Road realignment, connecting with the proposed new roundabout onto the realigned SH 88.

With the change in SH 88 alignment Logan Point Quarry traffic will now access the State Highway network by turning left onto the Ravensbourne Road realignment and connecting with SH 88 at the proposed new roundabout, rather than accessing the State Highway network adjacent to the Butts Road / Ravensbourne Road intersection.

The proposed bus drop-off / pick-up area for the stadium will be located on Minerva Street between Anzac Avenue and Parry Street, with bus parking located along both sides of Parry Street from Minerva Street to the new 'T' junction with Anzac Avenue, and on Anzac Avenue from Parry Street to Minerva Street. Access to the bus drop-off / pick-up area and bus parking will be from the new roundabout at the intersection with the realigned SH 88, Frederick Street, Parry Street, and St Andrew Street extension. This roundabout provides connections for buses from the North, West and South of areas of Dunedin. Buses from SH 88 (East) will access the drop off and parking areas from the new roundabout East of Butts Road (Figure 2-15).

Due to the quantum of University and activity within the precinct at all times, an opportunity exists for the provision of a 'link bus' loop that connects the central city, the University and the Stadium precinct. As the Harbourside precinct develops this loop can easily extend to service this area as well, providing the people of Dunedin with a great public transport amenity. The possibility exists for this loop to be enhanced further through a tram loop in lieu of a 'link bus'. Significant advantages would be possible if this service were free to the user, however funding for the service would need to be identified in this case.

Currently DCC are investigating various cycle path options in the vicinity of the Awatea Street site. The proposed 'Vision for Cycling Routes through the Harbourside Area' is shown in Figure 2-13. 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, particularly the proposed on road arterial cycle route and the connection of the proposed non-arterial cycle route to the central city / University. This is discussed in more detail in Section 2.3.4.